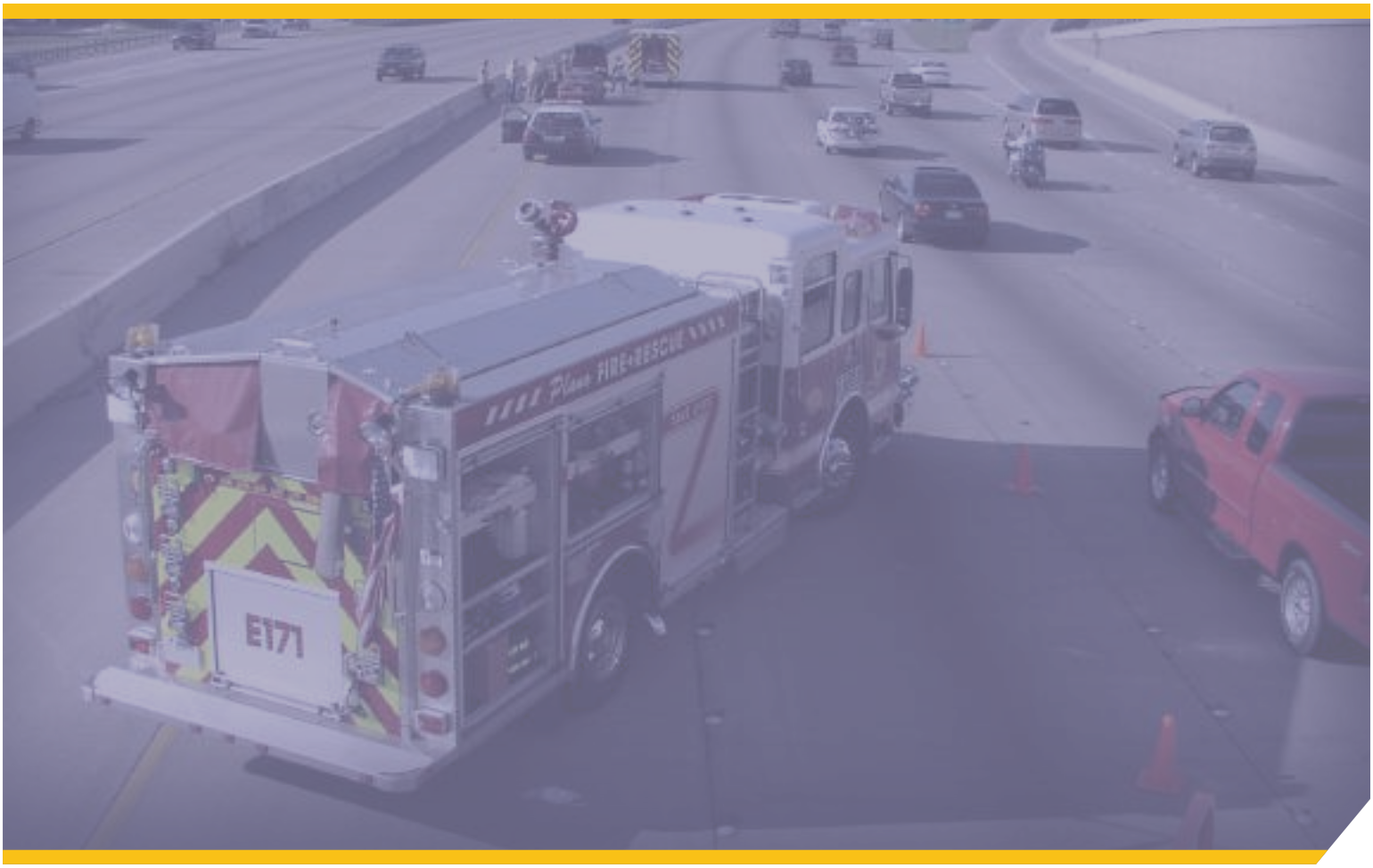

National Traffic Incident Management Responder Training Program

MAINE
Train-the-Trainer Guide

VERSION 3 | October 2017

U.S. Department of Transportation
Federal Highway Administration

SHRP2 SOLUTIONS
STRATEGIC HIGHWAY RESEARCH PROGRAM

American Association of State Highway and Transportation Officials
AASHTO

TRB

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ACRONYMS

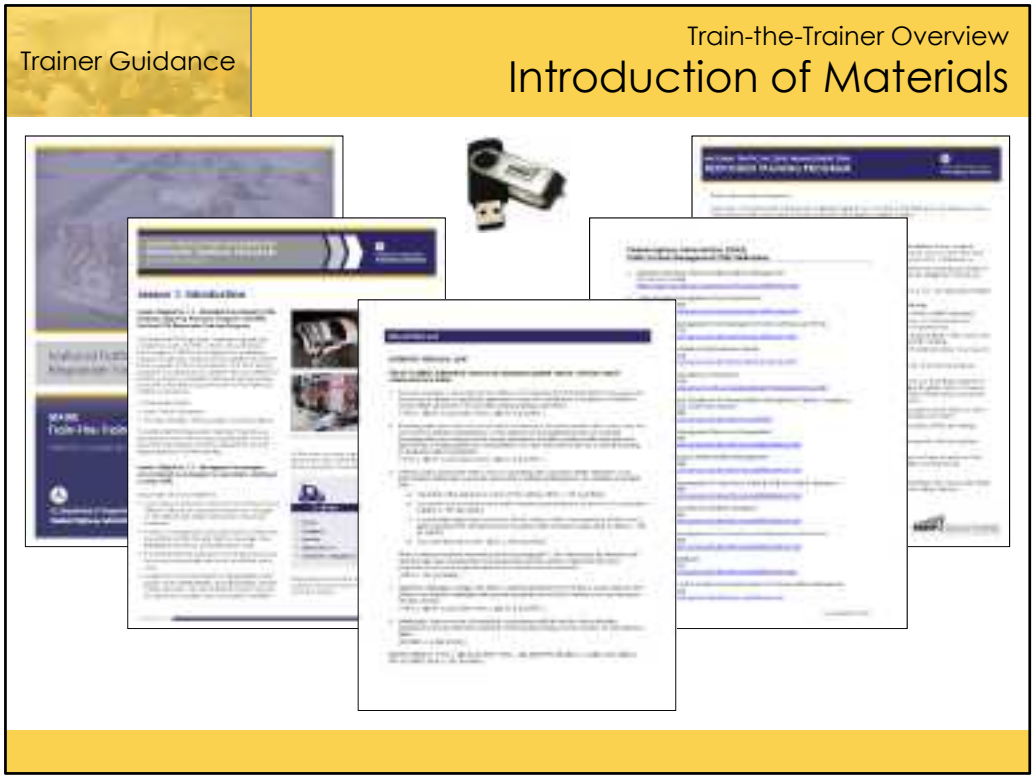
2D	–	Two-Dimensional
AAA	–	American Automobile Association
AAR	–	After-Action Review
ANSI	–	American National Standards Institute
ATSSA	–	American Traffic Safety Services Association
CAD	–	Computer-Aided Dispatch
CCTV	–	Closed-Circuit Television
CFR	–	Code of Federal Regulations
CMS	–	Changeable Message Signs
DMS	–	Dynamic Message Signs
DOJ	–	Department of Justice
DOT	–	Department of Transportation
DUI	–	Driving Under the Influence
EMS	–	Emergency Medical Services
EOC	–	Emergency Operations Center
ERG	–	Emergency Response Guidebook
EV	–	Electric Vehicle
FBI	–	Federal Bureau of Investigation
FEMA	–	Federal Emergency Management Agency
FHWA	–	Federal Highway Administration
F/R	–	Fire/Rescue
FR	–	Flame Resistance
GIS	–	Geographic Information System
GP	–	General Purpose
GPS	–	Global Positioning System
GVW	–	Gross Vehicle Weight
HAR	–	Highway Advisory Radio
Hazmat	–	Hazardous Materials
HEV	–	Hybrid-Electric Vehicle
HOT	–	High Occupancy Toll
HOV	–	High Occupancy Vehicle
HVSA	–	High-Visibility Safety Apparel

IACP	–	International Association of Chiefs of Police
IC	–	Incident Commander
ICP	–	Incident Command Post
ICS	–	Incident Command System
ISEA	–	International Safety Equipment Association
LE	–	Law Enforcement
MMUCC	–	Minimum Model Uniform Crash Criteria
MOU	–	Memorandum of Understanding
MUTCD	–	Manual on Uniform Traffic Control Devices
NASCAR	–	National Association for Stock Car Auto Racing
NFPA	–	National Fire Protection Association
NHTSA	–	National Highway Traffic Safety Administration
NIJ	–	National Institute of Justice
NIMS	–	National Incident Management System
NUG	–	National Unified Goal
OSHA	–	Occupational Safety and Health Administration
PAR	–	Police Accident Report
PCMS	–	Portable Changeable Message Signs
PSAP	–	Public Safety Answering Point
SHRP2	–	Strategic Highway Research Program 2
TIH	–	Toxic Inhalation Hazard
TIM	–	Traffic Incident Management
TMC	–	Transportation Management Center
TMP	–	Transportation Management Plan
TOC	–	Traffic Operations Center
T&R	–	Towing and Recovery
TRAA	–	Towing and Recovery Association of America
TTC	–	Temporary Traffic Control
UAV	–	Unmanned Aerial Vehicle
UCR	–	Uniform Crime Reporting
USFA	–	U.S. Fire Administration
VMS	–	Variable Message Signs

Welcoming Remarks

- Welcome students to the class and have the trainers introduce themselves, including name, agency, and years on the job
- Cover the following information about the training facility:
    - Exits
    - Bathroom locations
    - Policy for food and drink in the classroom
    - Locations for drinks, snacks, and meals
    - Smoking rules for the facility
    - Policy for cell phones, text messages, pagers, and portable radios
    - Signing the class roster

Train-the-Trainer Overview



Train-the-Trainer Overview

Trainer Guidance

Train-the-Trainer Overview

Presentation Format

Blue Slides

- 4-Hour TIM Responder Training course material

Yellow Slides

- Trainer guidance intended to assist with delivery of the course
- Only included in Train-the-Trainer sessions

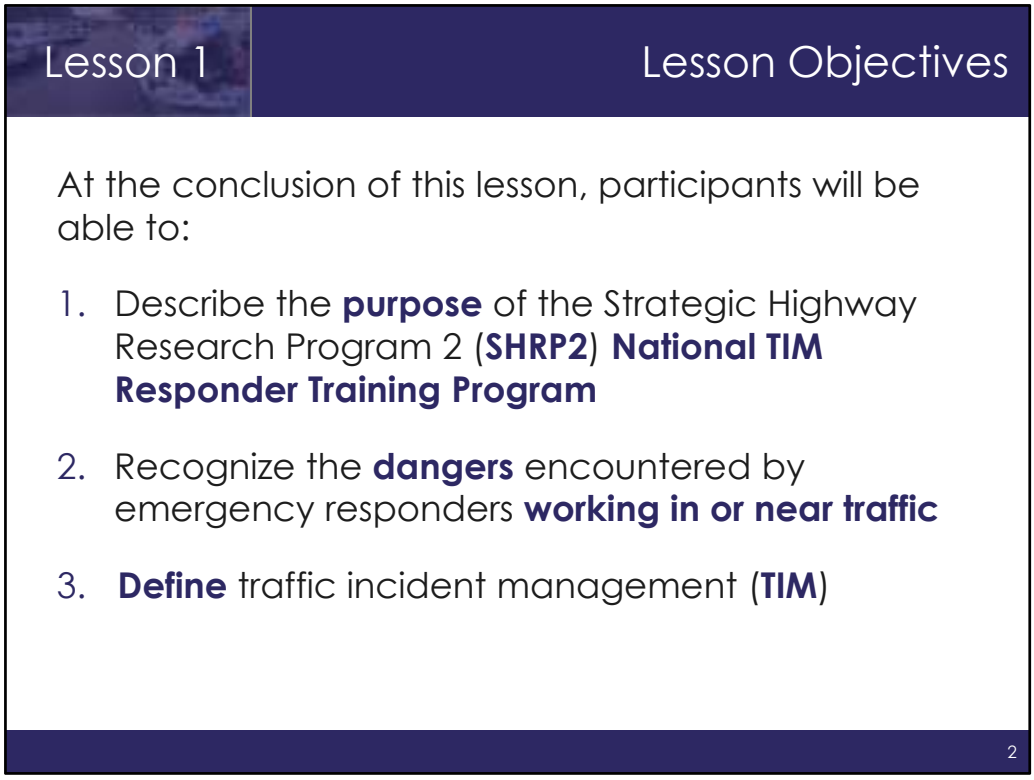
Videos

- Now play as part of click forward sequence

Lesson 1: Introduction

1

Lesson 1



Lesson Objectives

- Describe that each lesson starts with a set of lesson objectives
- Emphasize that lesson objectives help to ensure necessary material is covered
- Note that the lesson objectives will be reviewed at the end of each lesson
- Review Lesson 1 objectives

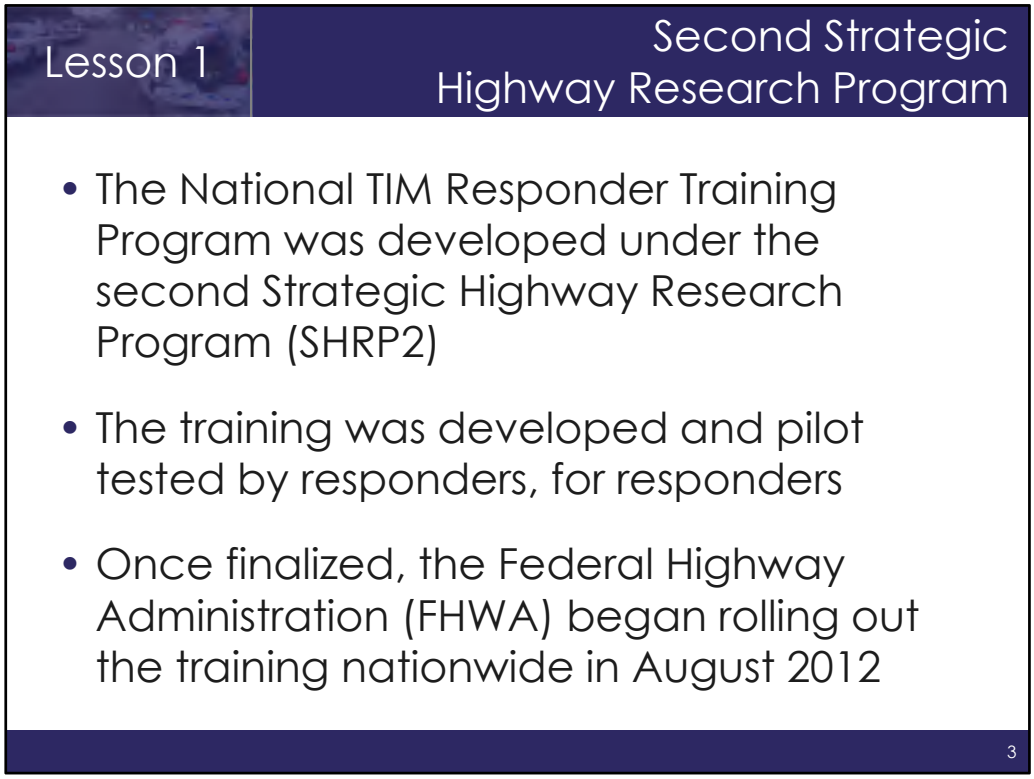
Lesson 1
Trainer Guidance

Discussion Points

Establishing Credibility of Training

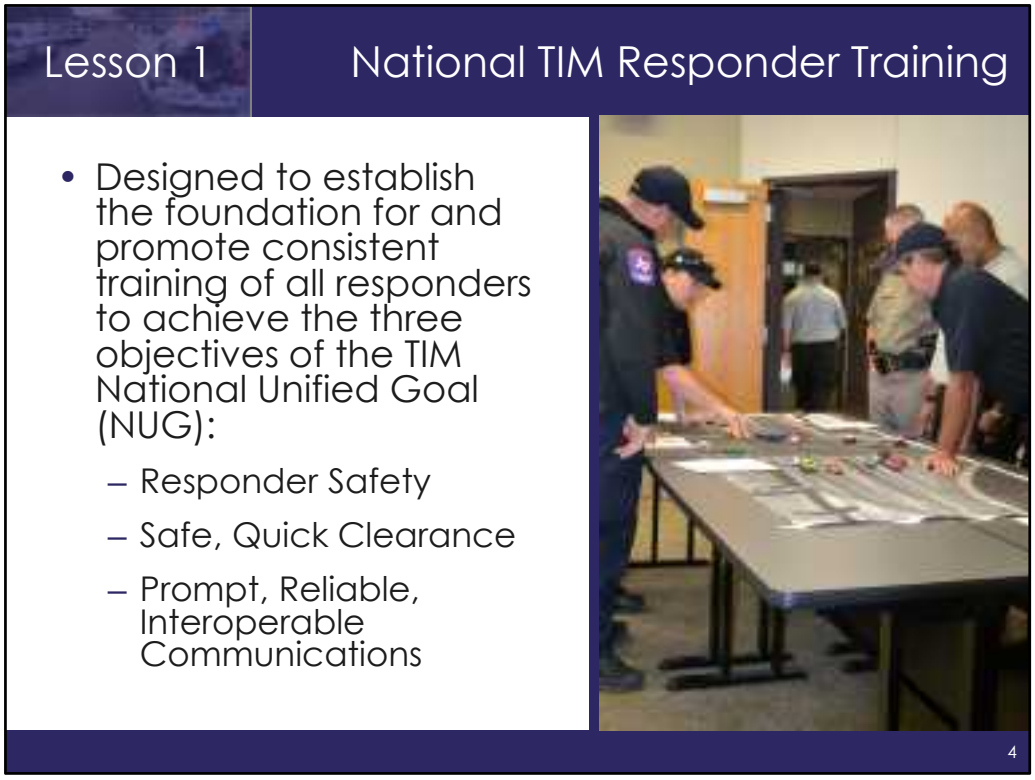
- It is critical to emphasize that this is a national training program created for responders by responders
  - Highlight that the program was developed by a multi-discipline group of national experts
- Note that within the first five years of the program over 250,000 responders had been trained
  - Ultimate goal is reach over one million responders and institutionalize TIM training

Lesson Objective: 1.1



Lesson Objective: 1.1

- The National TIM Responder Training Program was created as part of the second Strategic Highway Research Program (SHRP2)
- Congress authorized SHRP2 in 2005 to investigate the underlying causes of highway crashes and congestion in a short-term program of focused research
    - Dozens of research projects were completed under the four SHRP2 focus areas: safety, reliability, renewal, and capacity
- The training course was developed by and reviewed by responders from all disciplines
- The course was successfully pilot tested in four cities and subsequently adopted by FHWA for national rollout in 2012

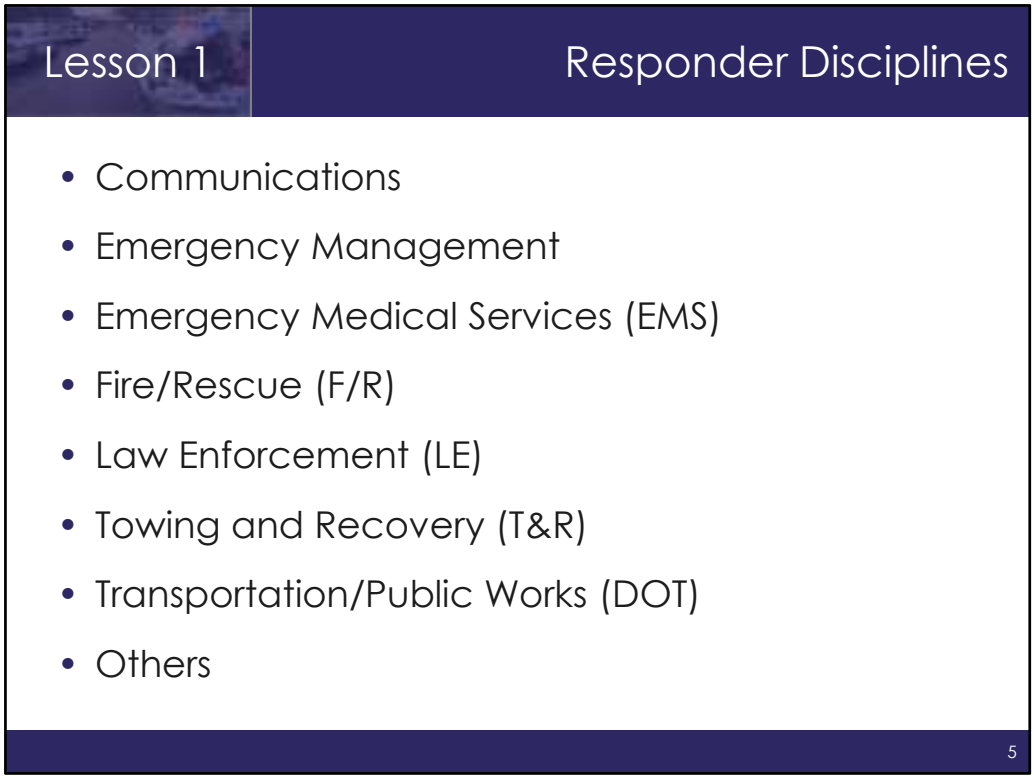


Lesson Objective: 1.1

- In 2006, organizations representing TIM stakeholders at a national level convened and developed a document referred to as the National Unified Goal (NUG) for TIM
    - Represents the unified national vision that this SHRP2 program addresses
- The NUG has three main objectives and 18 related strategies – the objectives are:
    - Responder Safety
    - Safe, Quick Clearance
    - Prompt, Reliable, Interoperable Communications

Reference:

- Appendix B – National Unified Goal for Traffic Incident Management Brochure



Lesson Objective: 1.1

- The target audience for the National TIM Responder Training Program includes all responder disciplines
- Responders/disciplines covered by "Others" include, but are not limited to:
    - Department of Natural Resources (or similar)
    - Hazardous Materials Clean-Up Specialists
    - Helicopter EMS/Air Ambulance Personnel
    - Medical Examiners/Coroners
    - State Environmental Agencies/Environmental Service Providers
    - Traffic Reporters
- It is highly recommended that TIM training classes be multi-discipline whenever possible

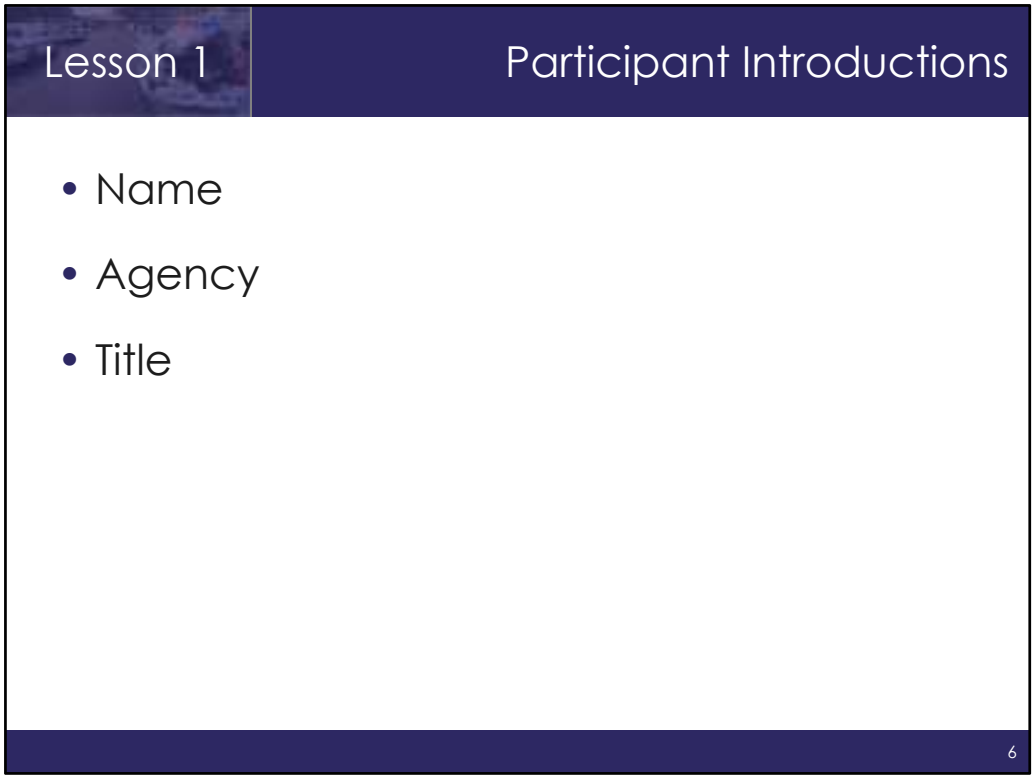
Lesson 1
Trainer Guidance

Trainer Techniques

Participant Introductions

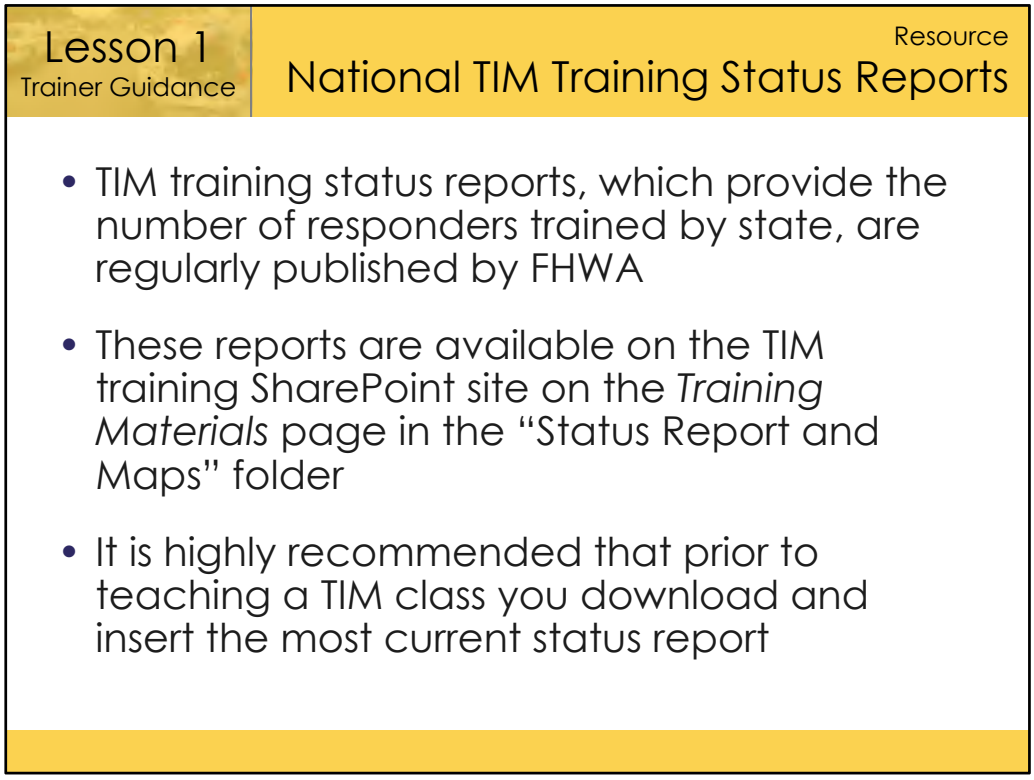
- It is recommended that regardless of the class size, participant introductions occur and include name and agency
  - This is important to facilitate relationship building between students
- For a smaller class, engaging the students by asking them to identify their chief complaint is an option
  - Alternatively, for larger classes, this question can be asked of the whole group, allowing for a handful of responses

Lesson Objective: --



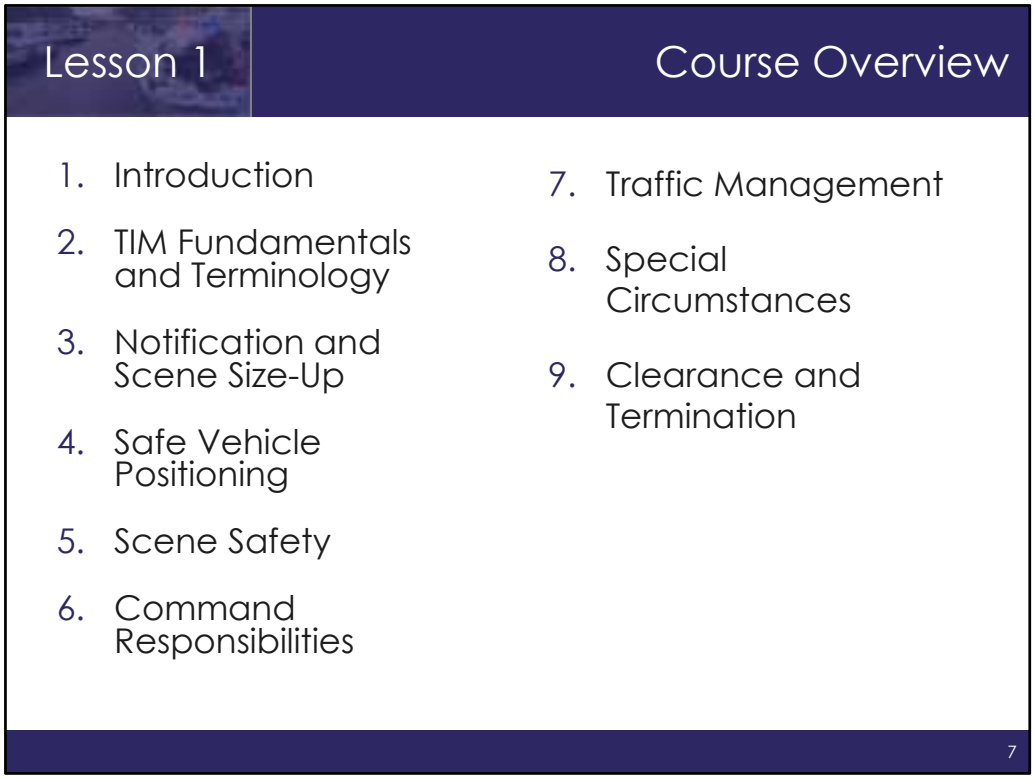
Lesson Objective: --

- Participant introductions are critical because they allow those present to know who they are training with
- By keeping introductions brief, and limited to the items above, they are easy to accommodate even with a large group



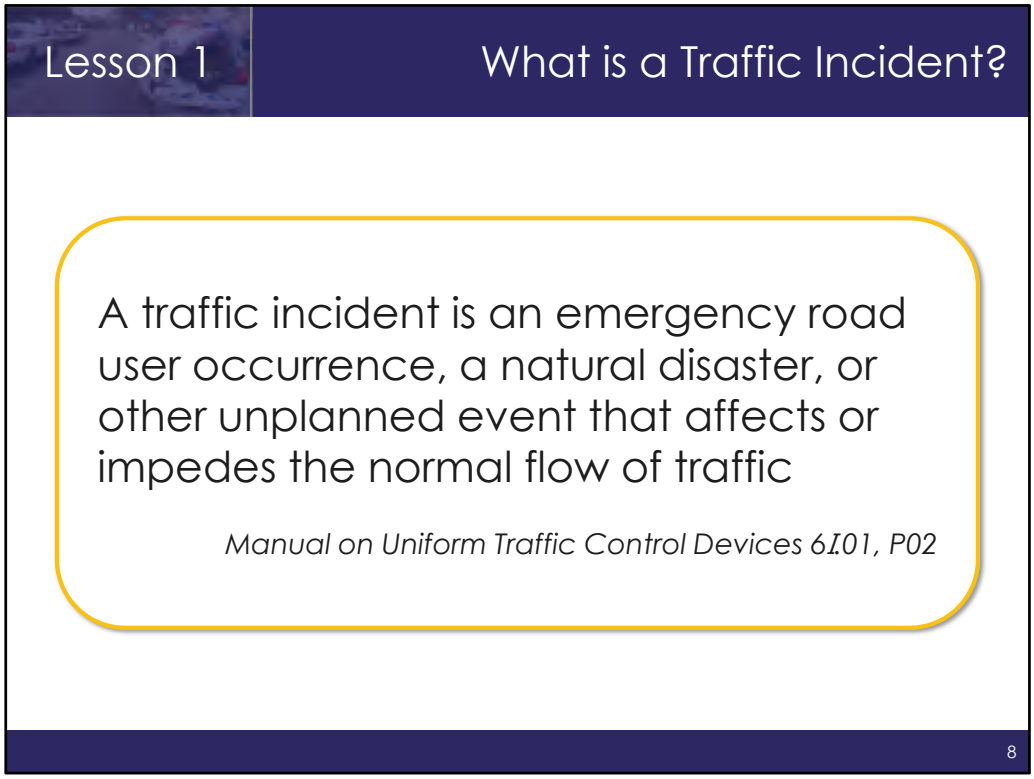
Lesson Objective: 1.1

- Once downloaded from the SharePoint site, the status report slides can easily be inserted into the training PowerPoint immediately after slide 6
- To insert the slides:
  - Highlight the slides you want to include in the status report PowerPoint, right click and select "Copy"
  - Above slide 7 in the training PowerPoint, right click and select the second option "Keep Source Formatting"
- While the template (header and footer) of the inserted slides will be different, keeping the source formatting will ensure that the students can properly view the information



Lesson Objective: --

- Review the structure of the course and the anticipated times for breaks
- Emphasize that the course lessons are similar to the chronological sequence of real-world incidents

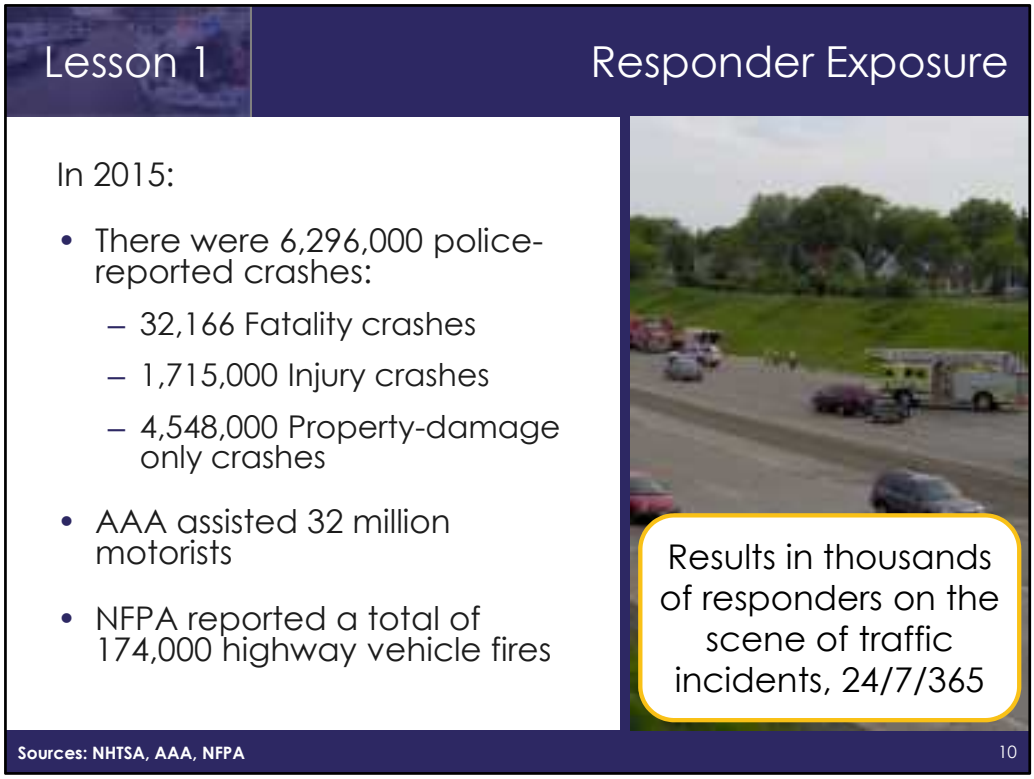


Lesson Objective: --

- Define traffic incidents to set the stage for the course and further discussion about safety
- Ask students to provide some examples of traffic incidents given this definition and write them on a flip chart or white board
    - Crashes
    - Debris
    - Disabled/stalled vehicles
    - Rollovers
    - Spilled cargo

Lesson Objective: --

- In terms of a justification or business case, responder safety, as well as motorist safety, correlates to a reduction in risk
    - From an individual agency standpoint, utilizing TIM is a cost effective risk management strategy due to the reduction in potential fiscal impacts from injuries and deaths
- The following slides look at each reason in more detail



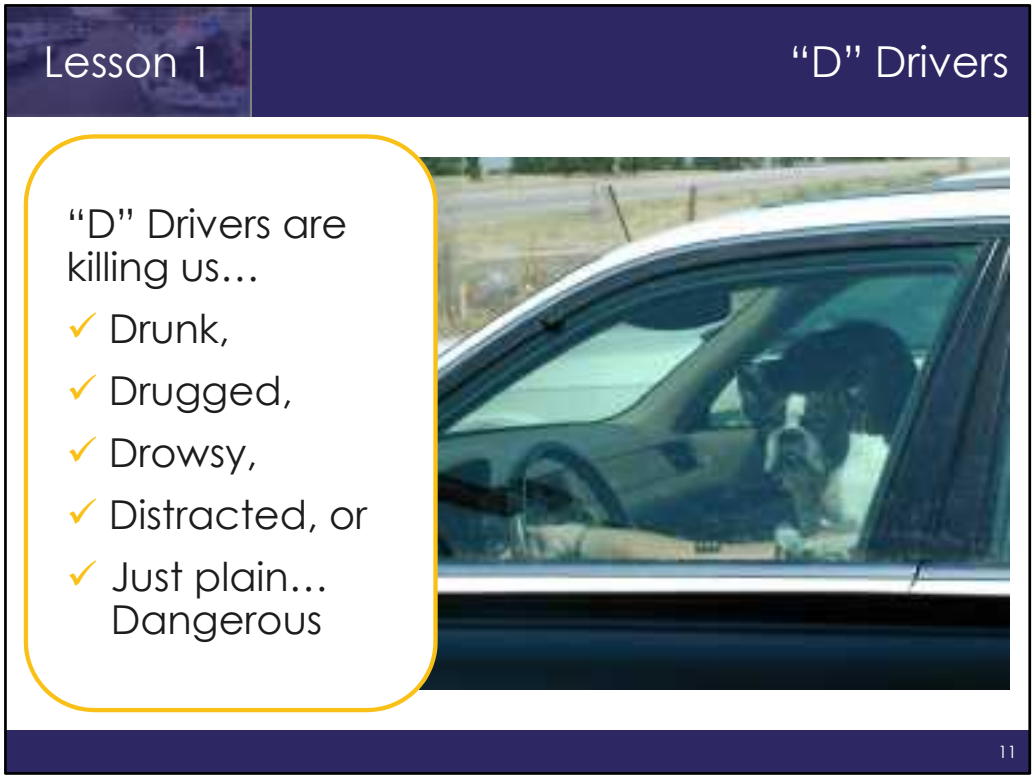
Lesson Objective: 1.2

- **Animation:** Click forward to reveal text box over picture

- Recall the definition of a traffic incident earlier and the examples that were given by the group
- Review the 2015 statistics, and note that these numbers typically do not include other incidents like unreported minor collisions or roadway debris
- The number of incidents points to the fact that as responders we are exposed to danger, throughout the day and night, at all types of incidents **[Click]**
- Minimizing the amount of time we have to operate in those conditions is a foundational principal of TIM and included in the NUG as safe, quick clearance

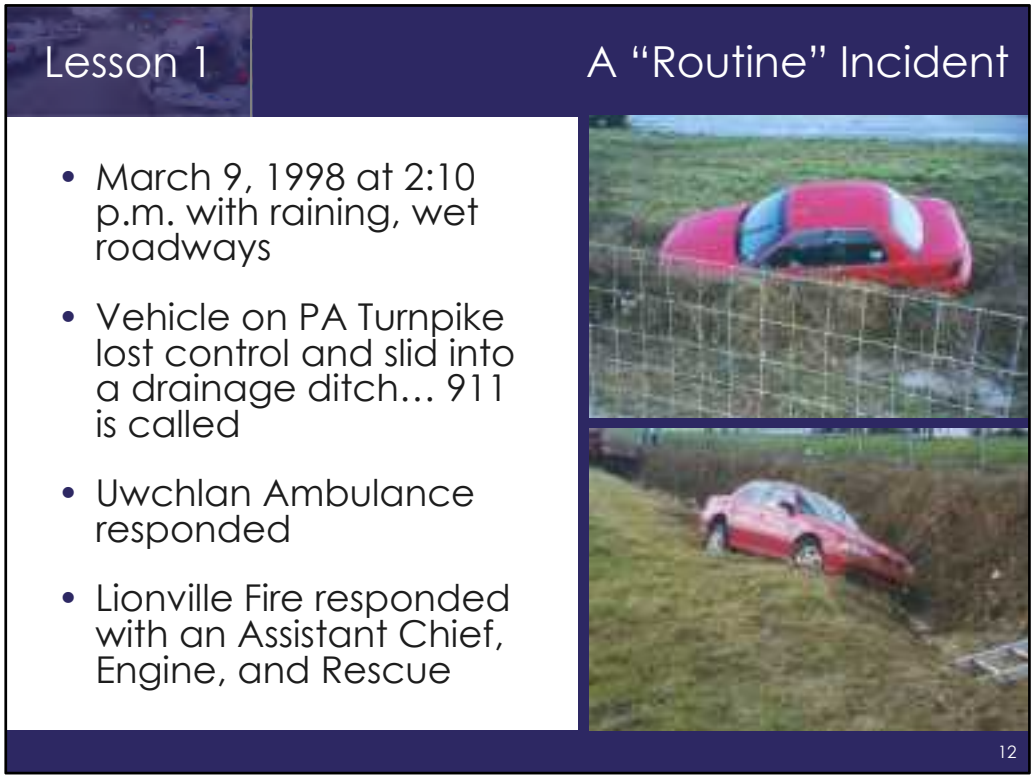
Sources:

- National Highway Traffic Safety Administration (NHTSA) – *2015 Traffic Safety Facts*
- American Automobile Association (AAA) Newsroom
- National Fire Protection Association (NFPA) News & Research
    - For NFPA's purposes, highway vehicles include any vehicle designed to operate normally on highways, such as automobiles, motorcycles, buses, trucks, and trailers, but not manufactured homes on foundations



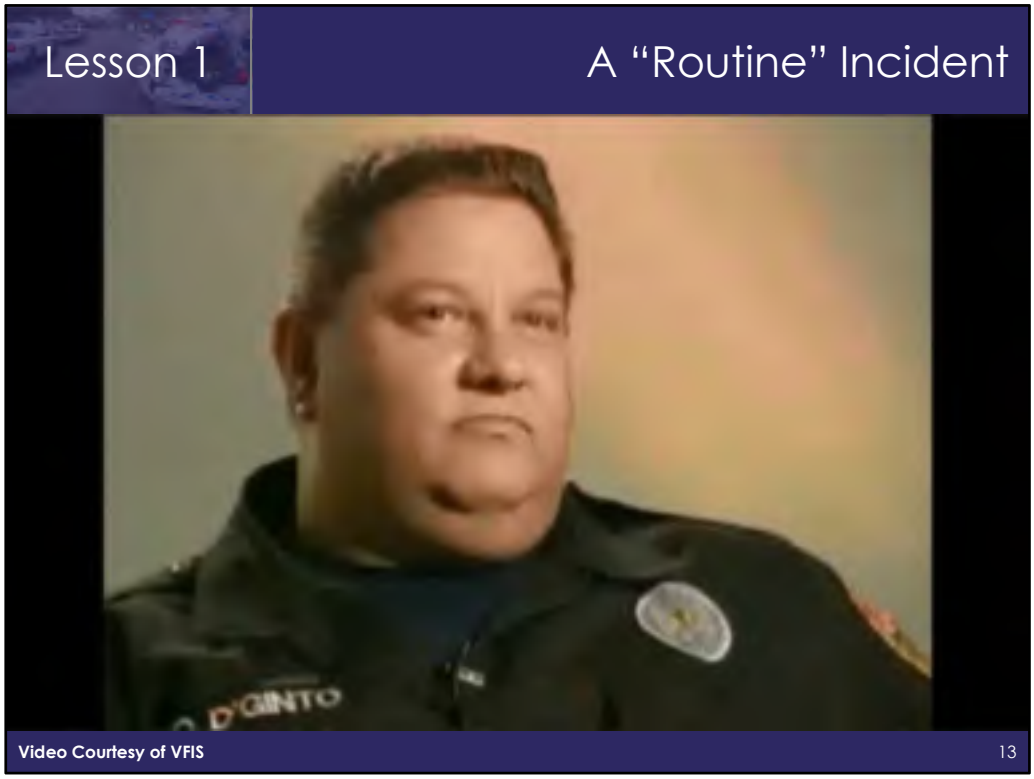
Lesson Objective: 1.2

- "D" Drivers is a phrase that has been coined to describe a type of driver who is inattentive, impaired, or makes poor driving decisions
- Other types of "D" Drivers include:
  - Disgruntled
  - Developing (young drivers)
  - Distinguished (older drivers)
  - Driverless
- According to the National Safety Council (www.nsc.org):
  - Using a mobile phone while driving is equivalent to driving impaired
    - Estimates indicate that drivers using cell phones look but fail to see up to 50 percent of the information in their driving environment
  - Texting while driving is equivalent to driving blindfolded
- These are the types of drivers who cause crashes and kill responders in the line of duty



Lesson Objective: 1.2

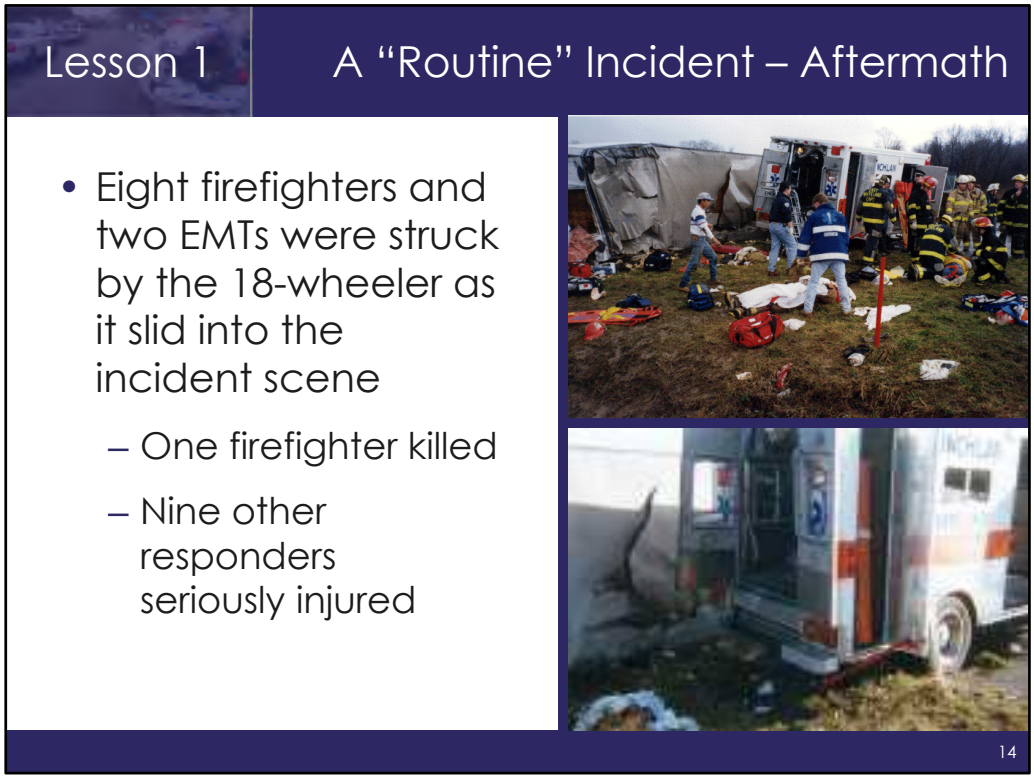
- An older incident from the Pennsylvania Turnpike still represents the largest number of responders struck in a single incident
- It was raining and wet when a Pontiac Grand Am heading west on the Pennsylvania Turnpike lost control and slid off the roadway
- Uwchlan Ambulance and the Lionville Fire Company were dispatched to the scene



Lesson Objective: 1.2

- **Video:** L1-V1_PA_Routine_Incident_Struck-By.wmv
- **Animation:** After approximately 30 seconds the video will shrink and move to the left corner to reveal a photo of the incident scene
    - This animation will only work if the video is started as part of the click forward sequence and will not work if the mouse is used to click the play button on the slide

- As the responders were working at the incident scene, an18-wheeler topped the hill, saw the incident, and attempted to change lanes
- The driver lost control and flipped the rig on to its side
- The vehicle slid down the hill and slammed into the unprotected incident scene just as the patient was being loaded into the ambulance
- Several responder vehicles, including the fire engine and the ambulance where the patient was being loaded, were struck



Lesson Objective: 1.2

- Firefighter David Good was struck and killed
- Assistant Chief Steve Senn had serious injuries and he did not return to active service
- Firefighter Mike Cox had multiple fractures in his leg that still result in recurring infections
- After the incident, meetings were conducted with the Pennsylvania Turnpike that resulted in the Turnpike hiring an emergency services coordinator to network with fire and EMS agencies
    - This led to changes in procedures for all responders on the Turnpike, including the Pennsylvania State Police

Lesson 1
Trainer Guidance

Local Customization
Struck-By Fatalities

- The following struck-by fatality examples are intended to further highlight the dangers encountered by responders working in or near traffic
- These case studies can be replaced by local examples as deemed appropriate

Lesson Objective: 1.2

Lesson 1 — Dept of Transportation Struck-By

Providing Traffic Control

- Motorist Assist Operator Clifton J. Scott, 50, died after being struck by a drunk driver on I-70 in Independence, MO on September 21, 2012
- Scott, a 15-year Missouri DOT employee, was helping to reroute traffic around the scene of a four-vehicle crash when he was struck

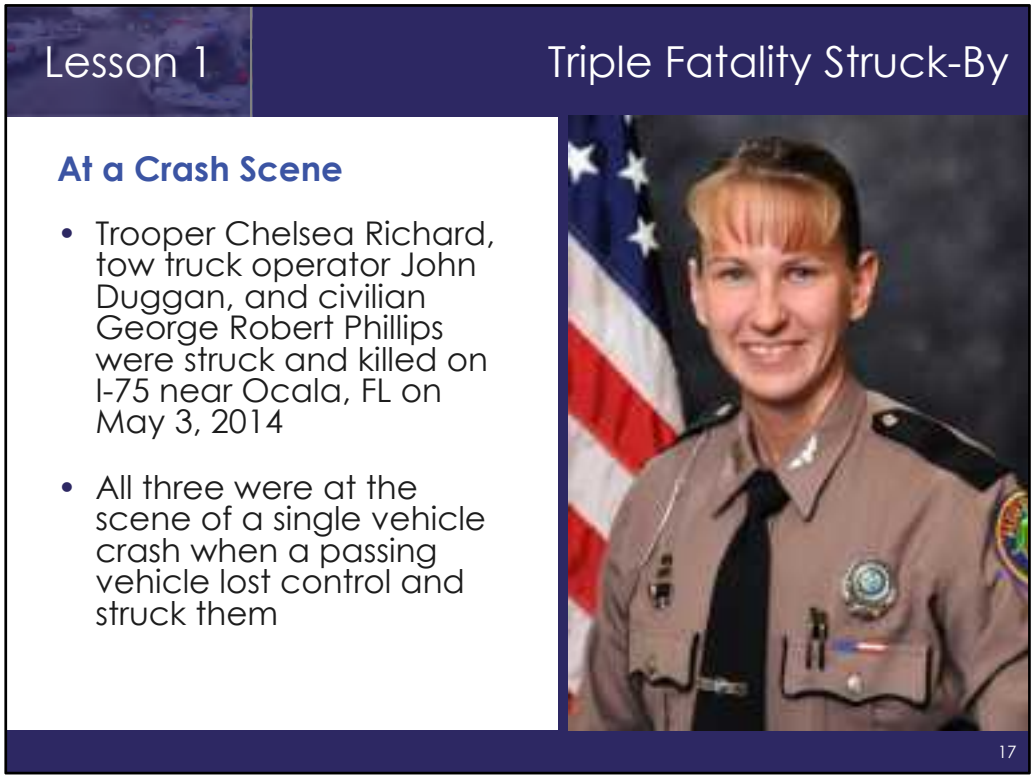
15

Lesson Objective: 1.2

- Clifton Scott, 50, was a Missouri DOT Motorist Assist operator
- He was providing traffic control assistance at an I-70/470 crash site at 2:52 a.m. on September 21, 2012
- Scott, a 15-year DOT employee, was helping to reroute traffic around the scene when he was struck by a passing motorist

Lesson Objective: 1.2

- The driver also struck Scott's Motorist Assist patrol vehicle causing it to catch fire
- Tests indicated the driver's blood alcohol content was 0.184 percent, more than twice the legal limit
- The driver was charged with involuntary manslaughter

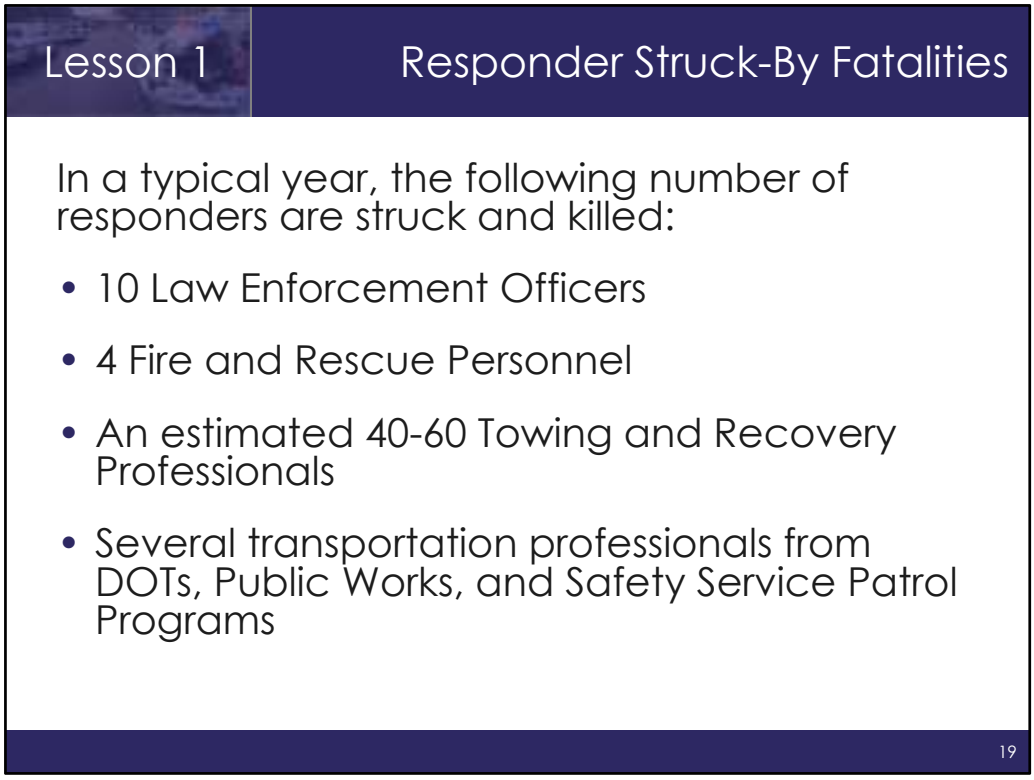


Lesson Objective: 1.2

- It was a rainy Saturday afternoon on May 3, 2014 when a single vehicle crash occurred on southbound I-75 near Ocala, FL
- The involved pickup truck was on the left paved shoulder of the roadway, facing the wrong direction (north)
- Trooper Chelsea Richard was investigating the crash
- Trooper Richard's vehicle was upstream, also on the left shoulder
- John Duggan responded at the owner's request and positioned his tow truck downstream, on the shoulder
- Duggan and Trooper Richard were on the grass median next to the involved pickup, along with George Robert Phillips, the father of one of the passengers in the vehicle

Lesson Objective: 1.2

- A Mercury Mariner was approaching the scene in the center of 3 southbound travel lanes
- A Ford F250 Pickup, pulling an empty flatbed trailer was to the left of the Mercury in the left lane
- The driver of the Mercury hit a wet spot on the road and lost control, forcing the vehicle to the left into the F250
- The F250 traveled onto the left paved shoulder and ultimately into the grass median (black pick-up in bottom photo)
- The F250, traveling on the grass left of the incident vehicles, struck Trooper Richard, Duggan, and Phillips and all three were killed
- The driver of the Mariner was charged with a traffic infraction for special hazards (speed too fast for conditions)
- The driver of the F250 was charged with a violation of the Move Over Law (not slowing or vacating the lane)
- Duggan was to celebrate his 37th wedding anniversary later that month
- Trooper Richard left behind a 4-year old son



Lesson Objective: 1.2

- According to the *2015 Law Enforcement Officers Killed and Assaulted Report*, 93 officers were struck by a vehicle and killed during the 10 year period between 2006-2015 (Source: Federal Bureau of Investigation's (FBI's) Uniform Crime Reporting (UCR) Program - https://ucr.fbi.gov)
    - 65 were struck and killed while directing traffic, assisting a motorist, etc.
    - 28 were struck and killed during a traffic stop, roadblock, etc.
- The National Fire Protection Association (NFPA) published a report in 2014 titled *U.S. Firefighters Killed when Struck by Vehicles, 2000-2013*, which found that 61 firefighters had been struck and killed by a vehicle during that 14 year period
    - 45 were struck and killed by non-fire department vehicles
    - 16 were struck and killed by fire department vehicles
- Through discussions with the International Towing and Recovery Hall of Fame and Museum in Chattanooga, TN and the Towing and Recovery Association of America (TRAA), it is estimated that between 40 and 60 tow operators are struck and killed each year
- Aside from work zone deaths, transportation and public works professionals, including Safety Service Patrol operators, are also killed at incident scenes
    - Unfortunately, exact numbers are not readily available

Lesson Objective: 1.2

- In addition to responder fatalities, struck-by crashes also have a significant impact on the responder community in the form of injuries and property damage
    - While fatalities are typically tracked at a national level, there is no database that tracks the number of responders that could no longer perform their job as the result of a struck-by crash
    - Similarly, there is no one place that tracks the total number of struck-by crashes that resulted in property damage only

Lesson Objective: 1.2

- Examples of responder struck-by crashes that occurred in Maine

Lesson Objective: 1.2

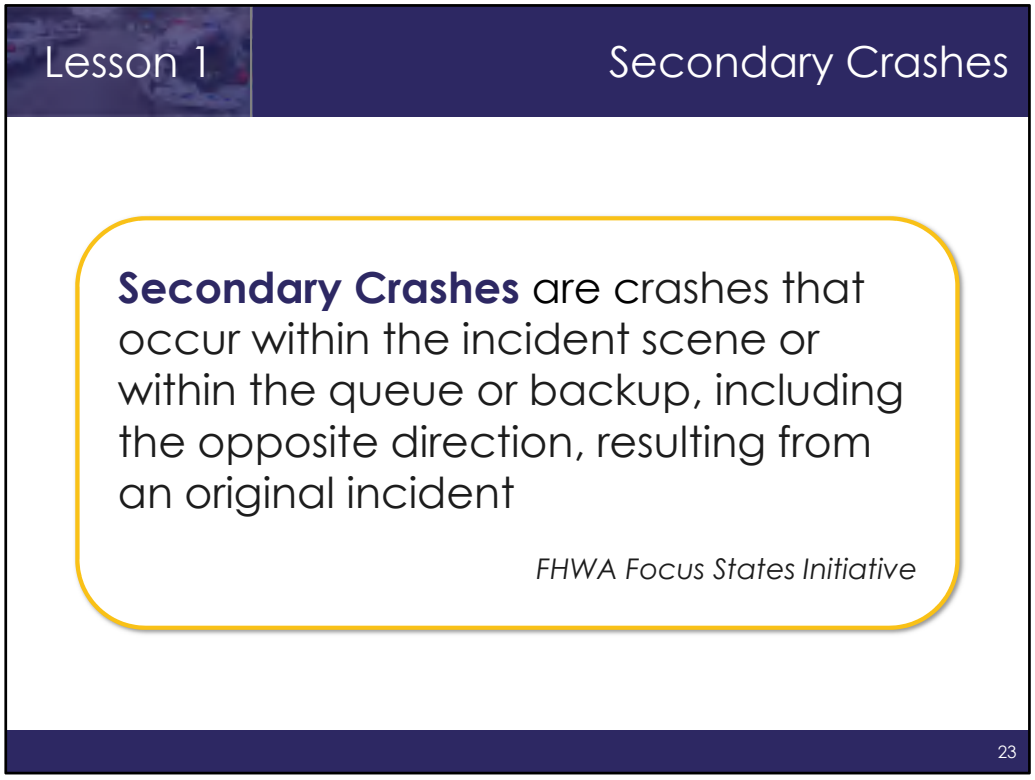
- Examples of responder struck-by crashes that occurred in Maine

Lesson 1
Trainer Guidance

Resource
ResponderSafety.com

Lesson Objective: 1.2

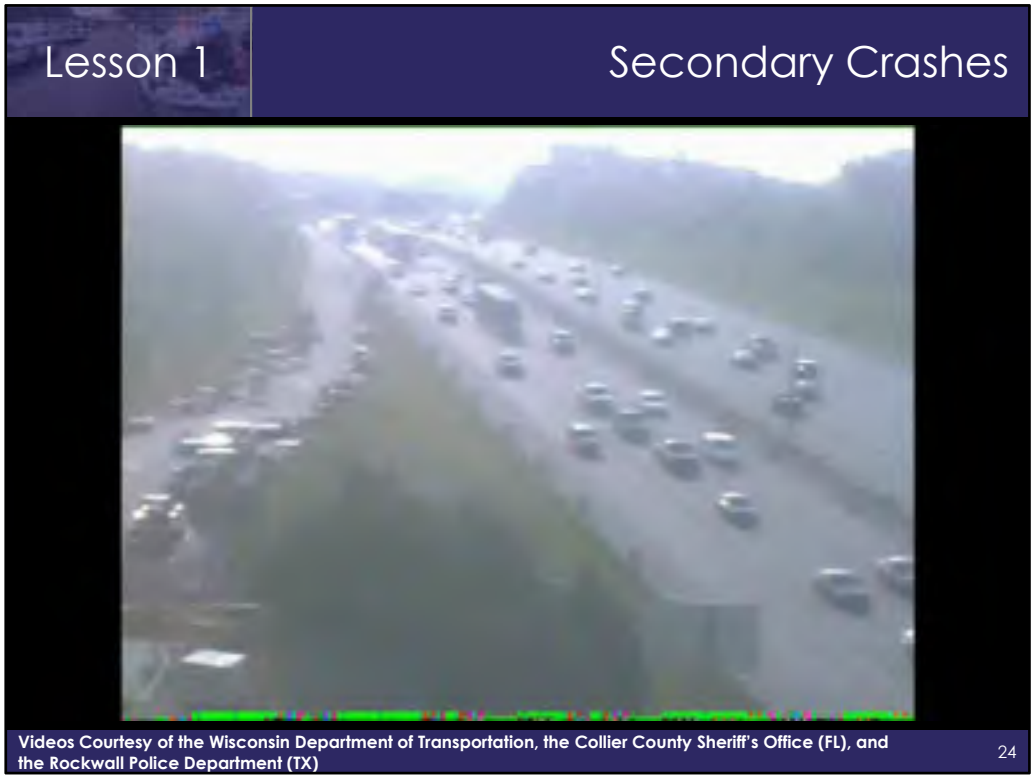
- The ResponderSafety.com website is a valuable resource for obtaining current struck-by, line of duty death, and near-miss information, as well as downloadable training materials and several web-based training modules



Lesson Objective: --

- Crashes that occur within the incident scene or within the queue or backup, including the opposite direction, resulting from an original incident are called secondary crashes
- Capturing the total number of secondary crashes has been difficult
- Regardless, we know they happen and we want to take steps to minimize their occurrence

- **Ask/Discuss:** When a secondary crash occurs, what does it do to our exposure as responders?



Lesson Objective: --

- **Video:** L1-V2_Secondary_Crashes.wmv

- Video compilation includes four secondary crash examples:
  - First clip – example of a back of queue secondary crash
    - Point out that the traffic has started to slow/stop in the bottom right corner of the video
  - Second clip – example of a secondary crash occurring at night very shortly after law enforcement arrives on scene
  - Third clip – example of a secondary crash on a two-lane roadway
  - Forth clip – example of a secondary crash occurring in the opposite direction of travel
    - At the beginning of the clip, note that the cable barrier did its job and prevented the vehicle from crossing into oncoming traffic
    - Point out the silver vehicle that begins to slow in the middle lane while passing the incident and almost comes a complete stop before being rear-ended
    - Refer back to the "D" Drivers – dangerous

Lesson 1 — Impacts of Incident-Related Congestion

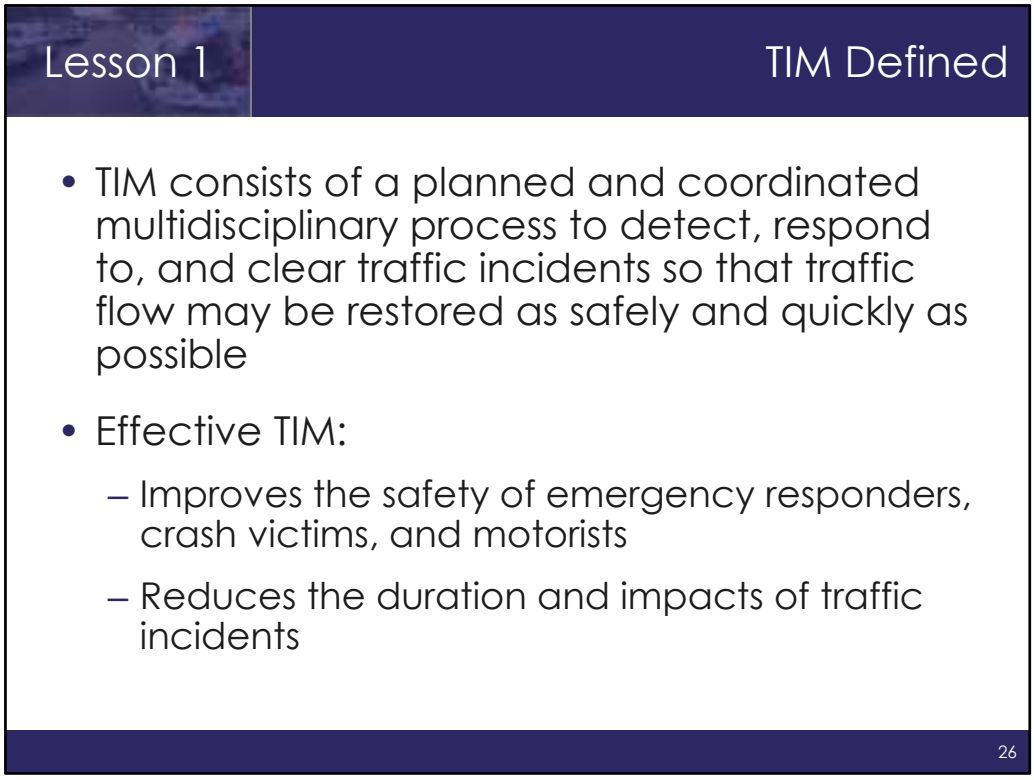
- **25%** of all congestion is caused by traffic incidents, resulting in:
  - Lost time and productivity
  - Increased cost of goods and services
  - Increased fuel consumption
  - Impacts on air quality and the environment
  - Negative public image for response agencies

AAA Crashes vs Congestion November 2011	Cost of Crashes		Cost of Congestion	
	Total	Per Person	Total	Per Person
2005 National	$164.2 billion	$1,051	$57 billion	$430
2009 National	$299.5 billion	$1,522	$97.7 billion	$590

25

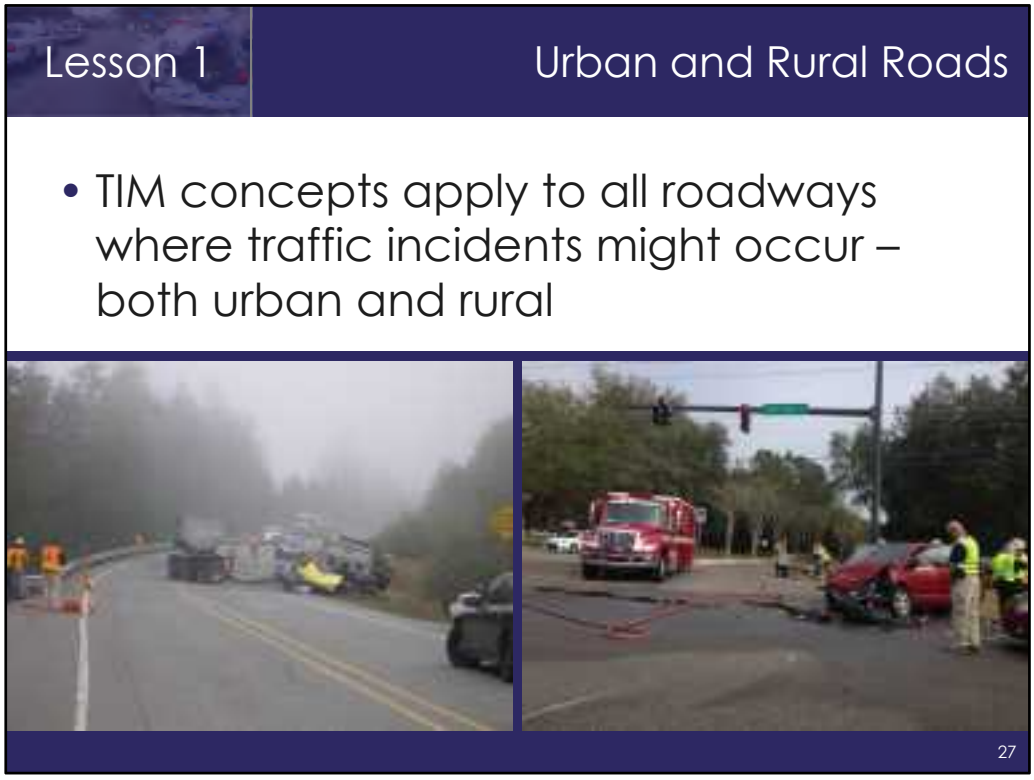
Lesson Objective: --

- Traffic incidents are responsible for 25% of all congestion and the remaining 75% is the result of:
  - Bottlenecks – 40%
  - Work zones – 10%
  - Bad weather – 15%
  - Poor signal timing – 5%
  - Special events/other – 5%
- Sitting in traffic costs everyone time, money, and fuel
  - Conversely, taking steps to reduce congestion saves everyone time, money, and fuel
- Consider that every traffic crash also has a cost attributed to it; medical costs, emergency services, property damage, lost productivity, etc.
- Although dated, the AAA studies – *Crashes Vs. Congestion, What's the Cost to Society?* – illustrate that the cost of crashes is three times the cost of congestion
  - Acknowledge that both numbers would be higher based on current data, but that the 3 to 1 ratio would likely still exist or be similar in nature



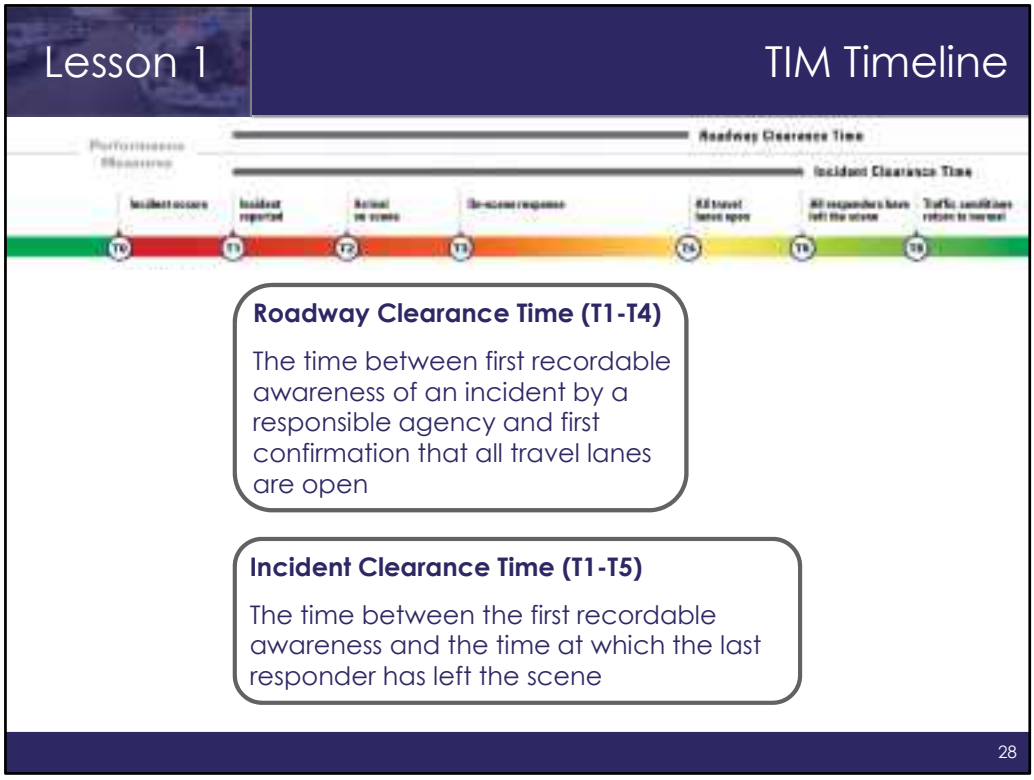
Lesson Objective: 1.3

- Reiterate that effective TIM has a direct impact on traffic congestion as well as the responder statistics and secondary crashes discussed in the previous slides



Lesson Objective: 1.3

- Although incidents in rural areas may not cause the same level of congestion as incidents in urban areas, rural areas still face a number of TIM-related challenges, including:
  - Limited resources in regard to both personnel and equipment
  - Longer response times
  - Rural roads can have higher speeds, narrower lanes, limited or no shoulders, hills and curves, as well as fewer available traffic control devices
  - Limited availability of detour routes



Lesson Objective: 1.3

- **Animation:** Click forward to bring in the definition of Roadway Clearance Time, click again to bring in the definition of Incident Clearance Time

- The TIM timeline lays out what happens from when an incident occurs until when traffic conditions return to normal
- Notice the color bar at the top of the chart changes from green to red, and then slowly back to green, representing potential traffic congestion along the timeline
- Along the color bar are time stamps T0 (incident occurs) through T6 (traffic conditions return to normal)
- The goal of TIM is to shorten the time duration between T0 and T6
- Incremental improvements during each phase may be easier to accomplish than drastically re-working any one aspect of TIM
- Reducing the duration of an incident reduces responder exposure
- The TIM activities under the timeline are those that responders typically perform and correspond with the lessons in this course
- The top area of the table shows two TIM performance measures
    - Roadway Clearance Time **[Click 1]**
    - Incident Clearance Time **[Click 2]**
- The third TIM performance measure is the number of secondary crashes
- TIM performance measures will be gaining more attention in the coming years

Lesson 1
Trainer Guidance

Discussion Points

NASCAR Pit Stop/TIM Team Analogy

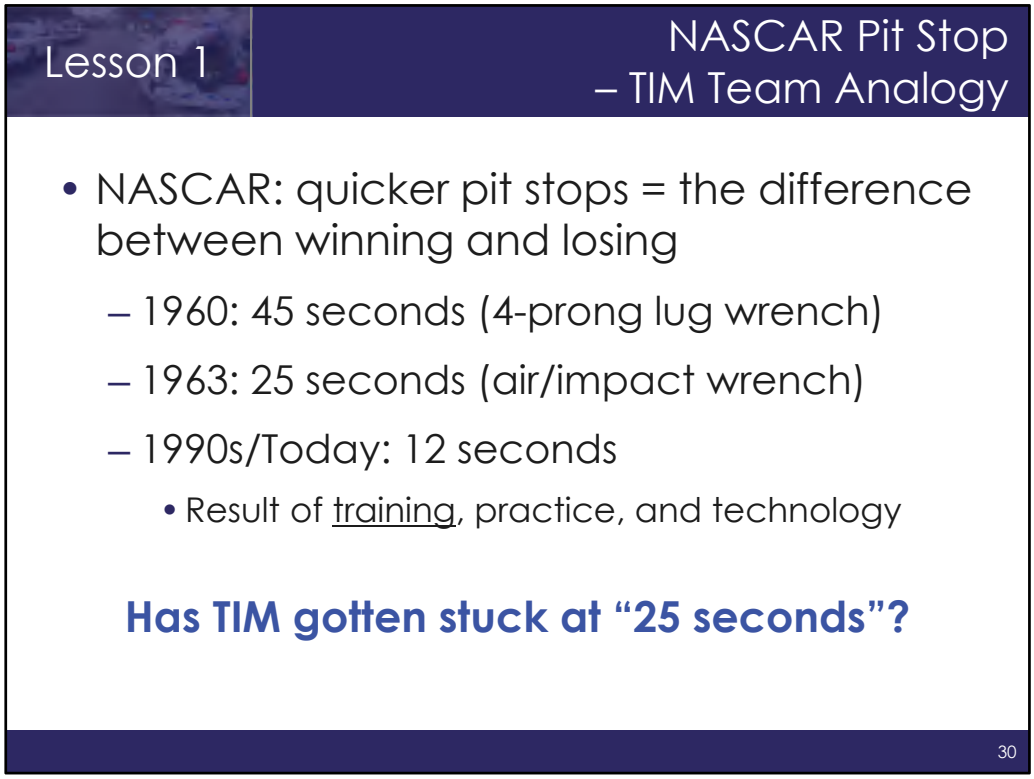
- Ask students to watch the video and consider what analogies can be made between a pit stop and the response to a traffic incident
  - Incident Commander
  - Safety Officer
  - Sense of urgency
  - Clear roles and responsibilities
  - Use of technology
  - Practice and training
  - Success = Safety + Expedited Response

Lesson Objective: 1.3

Lesson Objective: 1.3

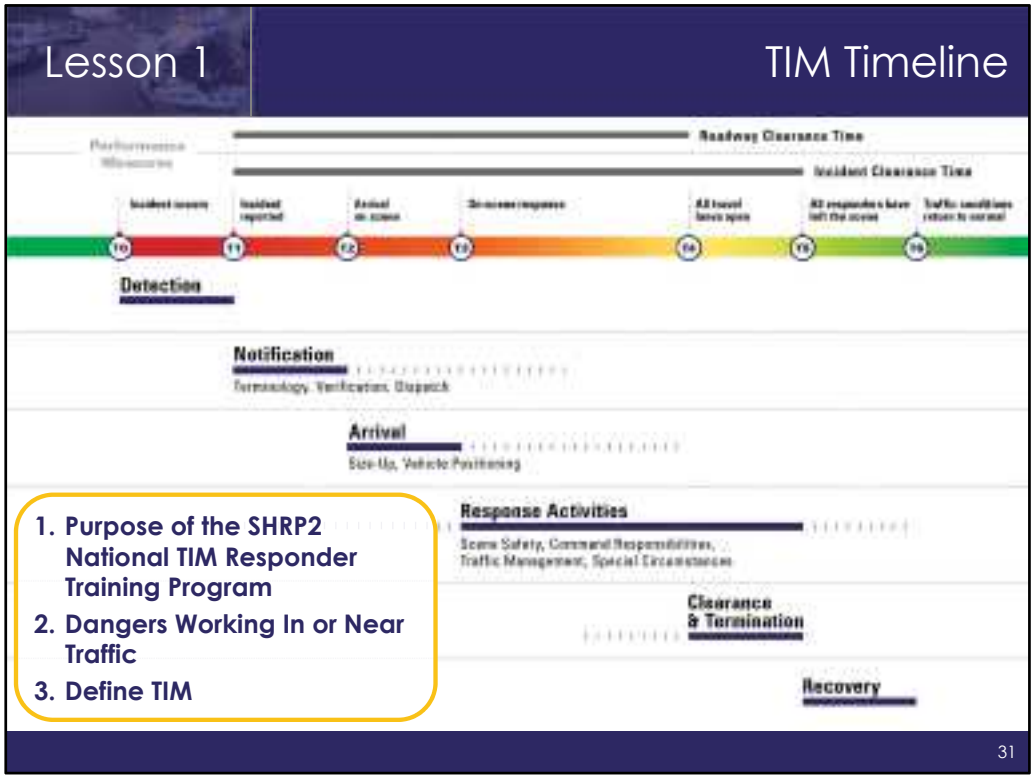
- **Video:** L1-V3_NASCAR_Pit_Stop.wmv

- **Ask/Discuss:** What analogies can be drawn between TIM and racing pit stops?
    - Incident Commander
    - Safety Officer
    - Sense of urgency
    - Clear roles and responsibilities
    - Use of technology
    - Practice and training
    - Success = Safety + Expedited Response



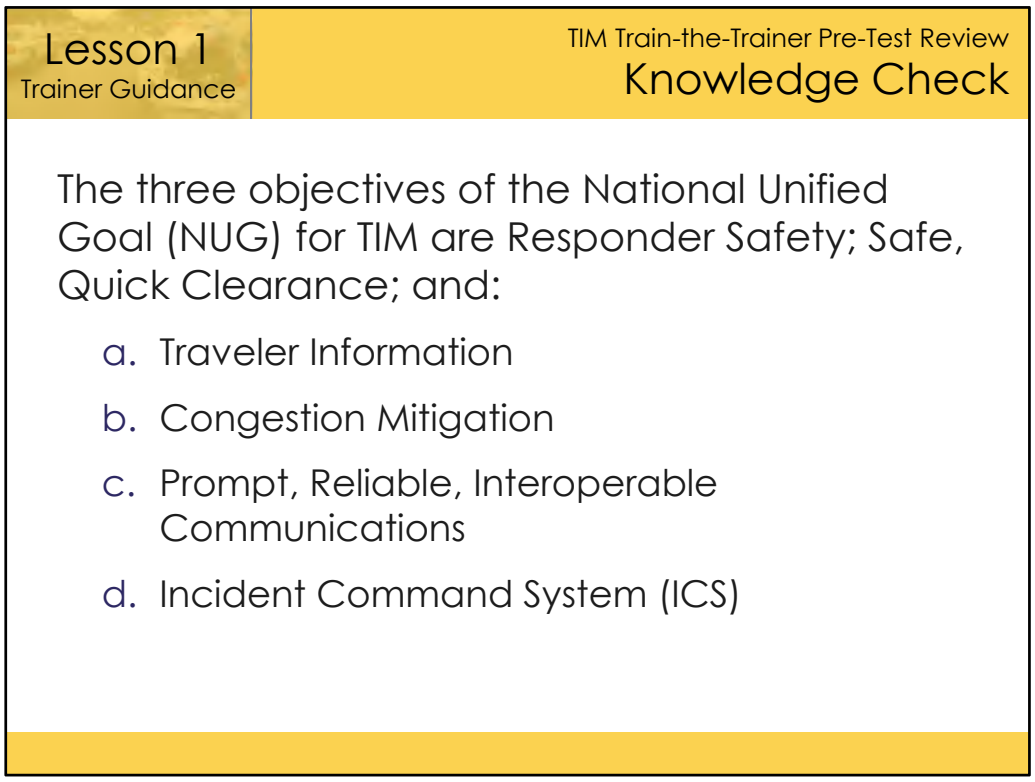
Lesson Objective: 1.3

- In the early 1960s, NASCAR race teams recognized that quicker pit stops often made the difference between winning and losing races
- Technology shortened these pit stops to around 25 seconds:
    - Spinning 4-prong lug wrench vs. use of the air impact wrench for example
- Training and practice led to professional pit crews, reducing stops to what they are today, 12-15 seconds
- The question has been raised – Has TIM gotten stuck at "25 seconds"?
- We should be able to apply the same principles of training, practice, and technology to effect similar improvements in our incident clearance times



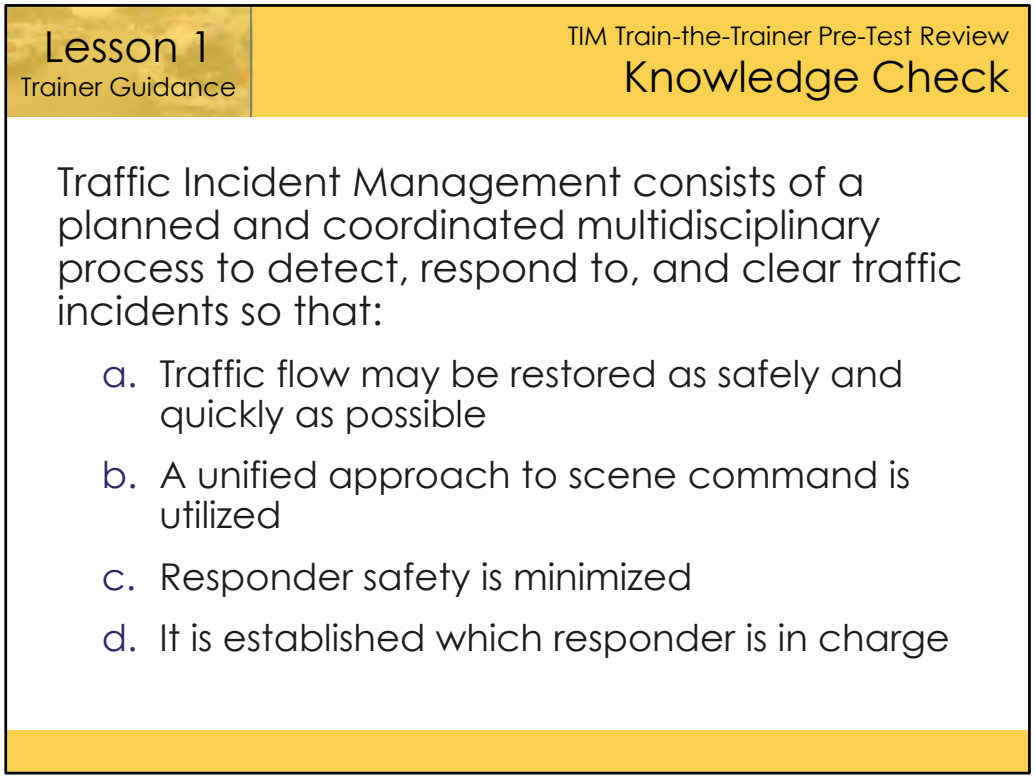
TIM Timeline	Lesson Objectives Review

- **Animation:** Click forward to bring up the lesson objectives review
- Note that the TIM timeline will be used to review the objectives at the end of each lesson



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 4



Knowledge Check	Correct Answer: a

- **Answer Reference:** Slide 26

Lesson 2:
TIM Fundamentals and Terminology

32

Lesson 2

Lesson Objectives

At the conclusion of this lesson, participants will be able to:

1. Define **safe, quick clearance**
2. List the **principal laws** that relate to responder safety and safe, quick clearance
3. Describe how the Manual on Uniform Traffic Control Devices (**MUTCD**) relates to TIM
4. Recall **common response terminology**, lane designations, and incident scene terminology

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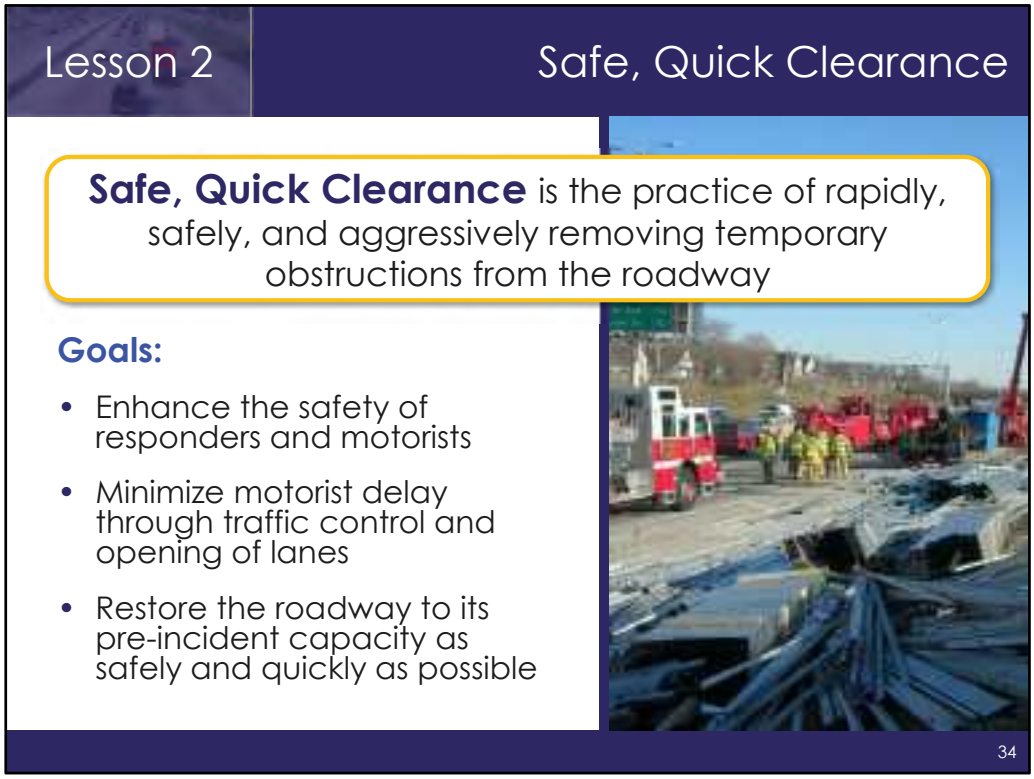


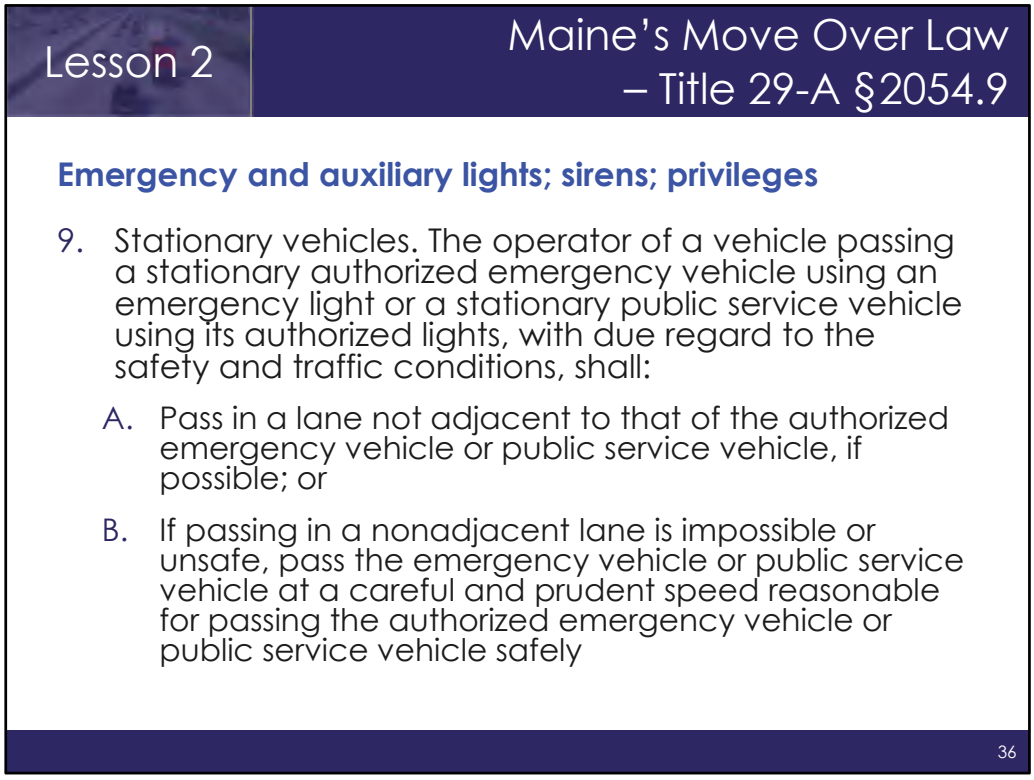
Lesson Objective: 2.1

- Safe, quick clearance is the second objective of the TIM National Unified Goal
- Safe, quick clearance and responder safety are NOT mutually exclusive, as a matter of fact they complement each other
    - Quick clearance reduces the exposure of responders to potential safety hazards
- Quick clearance gets traffic moving again and reduces delay for motorists
- The potential for secondary crashes is reduced when incidents are cleared quickly

Lesson Objective: 2.2

- **Animation:** Click forward to make blue boxes appear

- Every state has a Move Over Law, however, there are differences in the language of the laws from state to state
- While the mandate to change lanes when possible is universal, the slow down component varies
    - Most states have a slow down component that requires a reduction to a reasonable speed, but some do require a specific reduction in miles per hour
- The type of responder vehicles covered by the law also varies from state to state **[Click]**
    - Some do not include towing and/or highway maintenance vehicles
- In at least one state, California, the Move Over Law only applies to freeways
- The use of emergency vehicle lighting is a requirement in many Move Over Laws
- Public information and enforcement are key to promoting compliance in your state



Lesson Objective: 2.2

- Note that in §2054.1.I.1, a "Public service vehicle" refers to:
  - A vehicle used to assist members of the public or law enforcement officers with disabled vehicles or to remove debris from a roadway, or a vehicle used to construct, maintain, inspect or repair utility infrastructure, including, but not limited to, electricity, water, sewer, cable, telephone, gas and natural gas infrastructure
  - "Public service vehicle" includes a wrecker

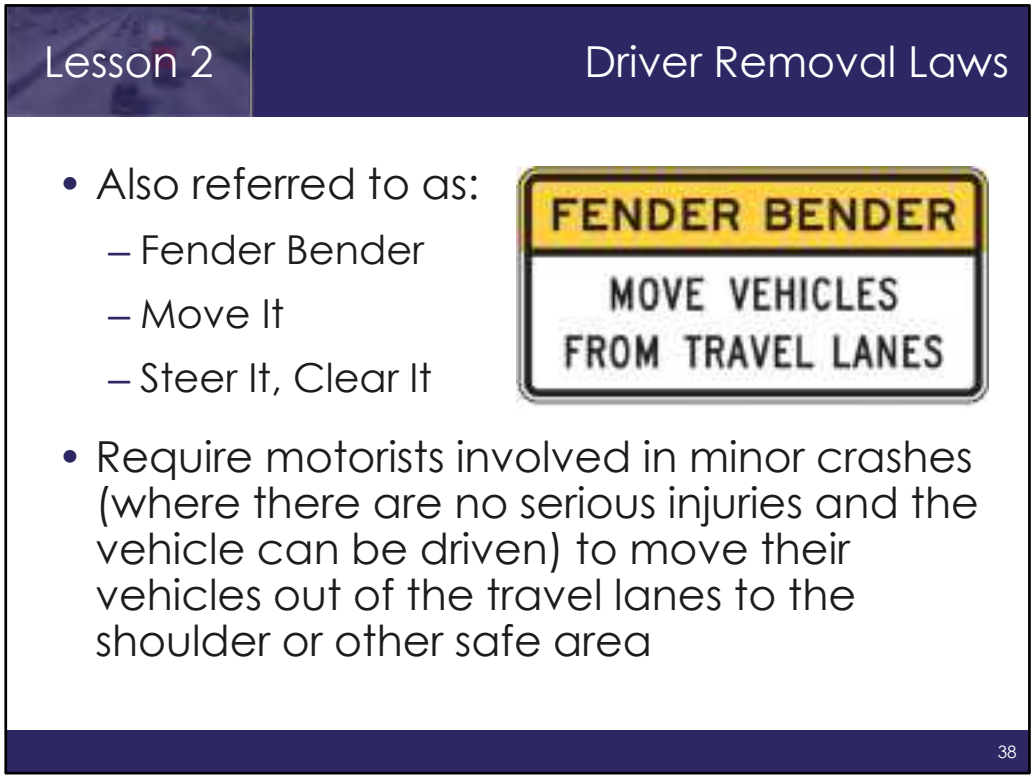
Reference:

- Appendix C – Maine TIM Laws

Lesson Objective: 2.2

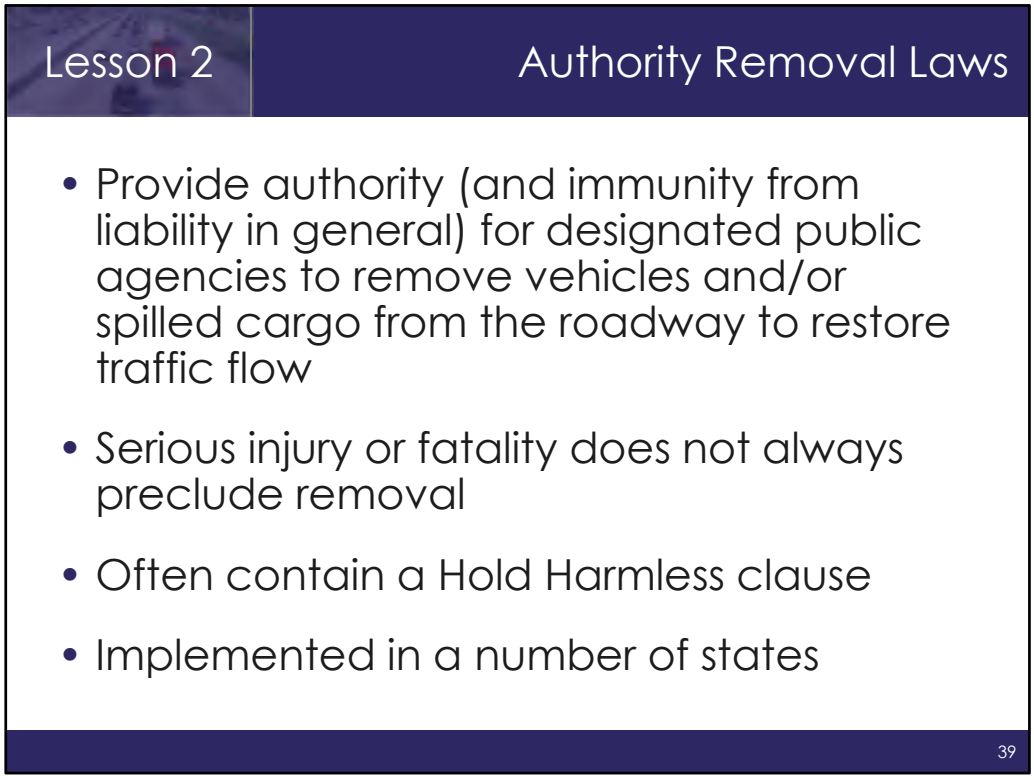
- **Animation:** First click reveals top text box and second click reveals bottom text box

- On multi-lane roadways, vacating the lane closest to responders (move over) is the ideal safety behavior **[Click 1]**
- Since a lane change is not always possible, bear in mind that a driver slowing is also acceptable **[Click 2]**
- Enforcement of Move Over Laws can be difficult as it typically requires that there be an officer on scene that is available to leave
- Move Over Laws are intended to reduce the risk of being struck, but responders should never let their guard down



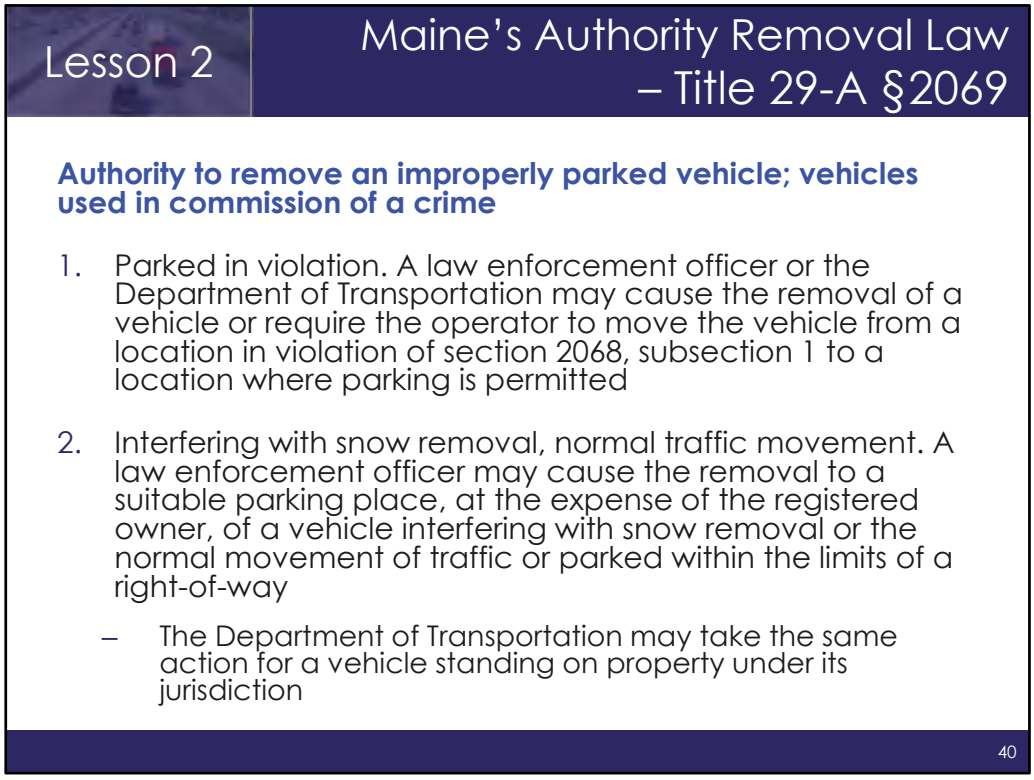
Lesson Objective: 2.2

- Unlike the Move Over Law, Driver Removal Laws are not present in every state
    - As of October 2017, Maine did not have a Driver Removal Law
- These laws require drivers to move their vehicles out of travel lanes when involved in minor crashes with no serious injuries
- These laws are sometimes found in the state law that requires drivers not to leave the scene of an accident
- Some states have additional laws or language that apply to disabled vehicles
- Motorists are often reluctant to move their vehicle until law enforcement arrives
- Some areas have created brochures for non-law enforcement responders to provide drivers to help convince them of their legal requirement to "move it"
- The Fender Bender sign shown is from MUTCD Section 2B.65



Lesson Objective: 2.2

- Not all states have an Authority Removal Law
- Authority Removal Laws give responders the legal authority to remove vehicles and cargo or other items spilled upon the roadway
    - In some cases the authority is specific to law enforcement and/or the department of transportation
- Hold Harmless is language that protects responders from liability resulting from their actions (in the absence of gross negligence)
- The Hold Harmless component is not always included in the law



Lesson Objective: 2.2

Reference:

- Appendix C – Maine TIM Laws

Lesson 2

Maine's Authority Removal Law Hold Harmless – Title 29-A §2069

Authority to remove an improperly parked vehicle; vehicles used in commission of a crime (continued)

4. Liability for damages; charges. The State, a political subdivision of the State or a law enforcement officer is not liable for damage that may be caused by removal of a vehicle or for any towing or storage charges

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Lesson Objective: 2.2

Reference:

- Appendix C – Maine TIM Laws

Lesson 2
Trainer Guidance

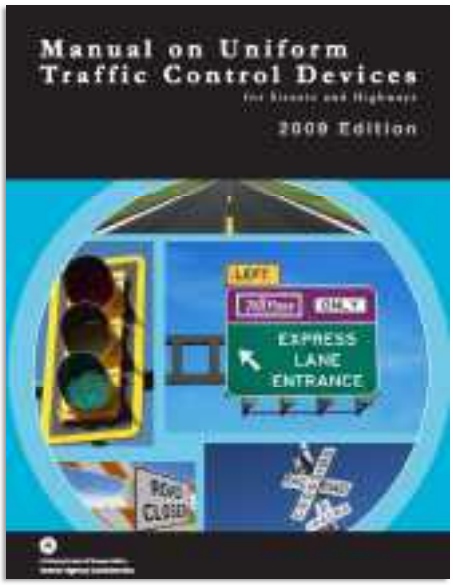
Discussion Point
TIM Laws

- Challenge your students to assist with motorist education efforts by reaching out to least 5 friends or family members to explain/remind them about the TIM laws

Lesson Objective: 2.2

Lesson 2 — Manual on Uniform Traffic Control Devices (MUTCD)

- Federal standard for all traffic control nationwide
- It also covers all workers on all streets, roadways, or highways
- This course addresses what is required to adhere to MUTCD standards



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Lesson Objective: 2.3

- The Manual on Uniform Traffic Control Devices is commonly referred to as the MUTCD
- The MUTCD is a national standard implemented by Title 23, United States Code, Section 109
- The MUTCD was first published in 1935, and it has been maintained by FHWA since 1971
- The current version was published in 2009, and the PDF is 864 pages
- The manual promotes uniformity for traffic control devices like signs, signals, and markings, which improves safety and driver expectancy
- There was extensive participation by practitioners in developing and evaluating the content of the MUTCD, including transportation and public safety
- *Standard*, *Guidance*, *Option*, and *Support* are the terms used to classify content in the MUTCD
    - Standards are clearly accompanied by the word "shall"
- For the most part, TIM responders just need to be familiar with MUTCD Chapter 6, which covers temporary traffic control
- The MUTCD can be accessed online at: http://mutcd.fhwa.dot.gov/

Lesson Objective: 2.3

- Sections of MUTCD Part 6 will be referenced throughout the training

Lesson 2

National Fire Protection Association
NFPA 1091 – 2015 Edition

Standard for Traffic Control Incident Management Professional Qualifications

- Developed in response to the recognized need for safe operations at incident scenes
- Was developed as a resource for all disciplines, not just fire
- Provides training requirement outline for incident traffic control personnel
- Consistent with the concepts taught in this course

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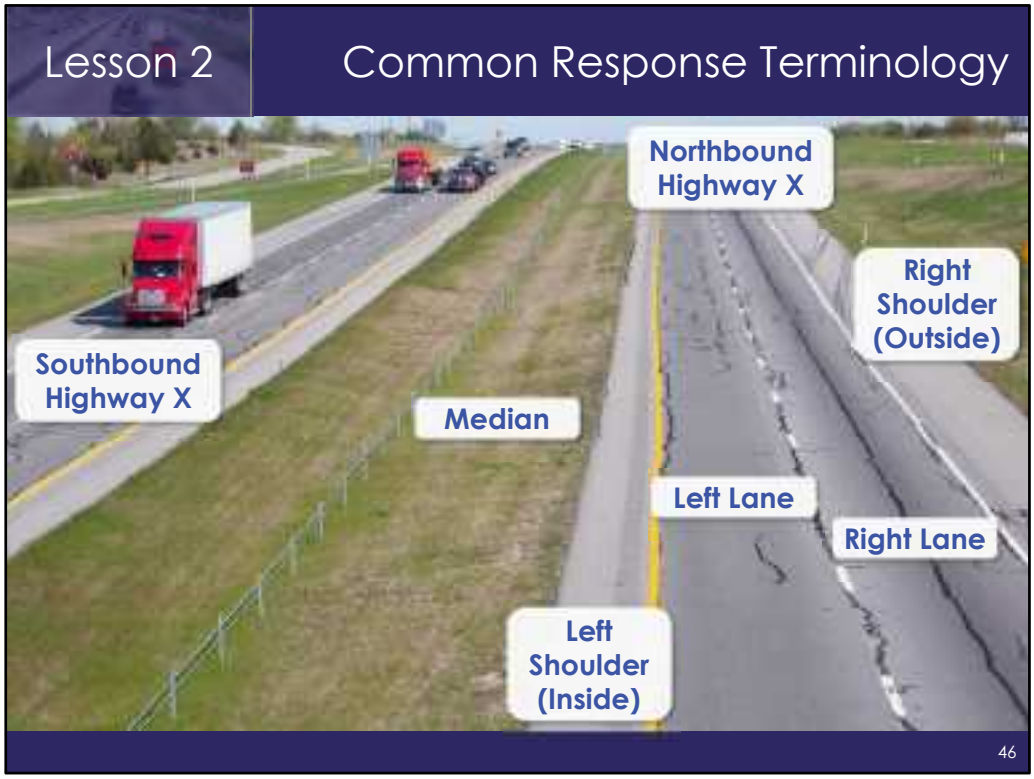
Lesson Objective: --

- Reinforce that NFPA 1091 and the National TIM Responder Training Program are consistent with each other
- Note that NFPA 1091 is currently under review and it is anticipated that future revisions will be named *Traffic Incident Management Personnel Professional Qualifications*

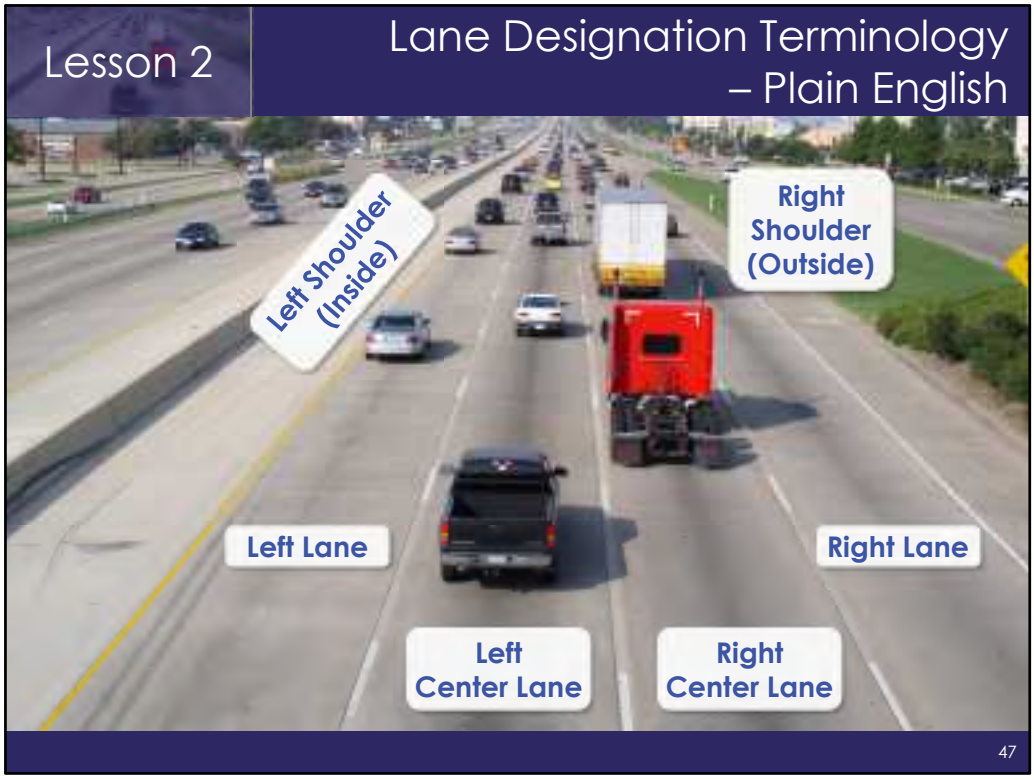
Lesson Objective: 2.4

- Highlight the need for common terminology among responder groups
- The National Incident Management System (NIMS) requires the use of the Incident Command System (ICS) at traffic incident scenes
    - ICS will be discussed in more detail in Lesson 6
- ICS requires the use of uniform terminology and plain English
- Review the common response terminology for a simple two-lane roadway with a turn lane



Lesson Objective: 2.4

- Review the common response terminology for components of this four-lane divided highway with a median
- Left and right are determined from the perspective of the flow of traffic
- Left is often analogous with inside and right with outside
- North, south, east, or west refer to the posted highway directions and are not necessarily exact compass directions



Lesson Objective: 2.4

- Review recommended plain English response terminology for elements of this eight-lane divided highway

Lesson Objective: 2.4

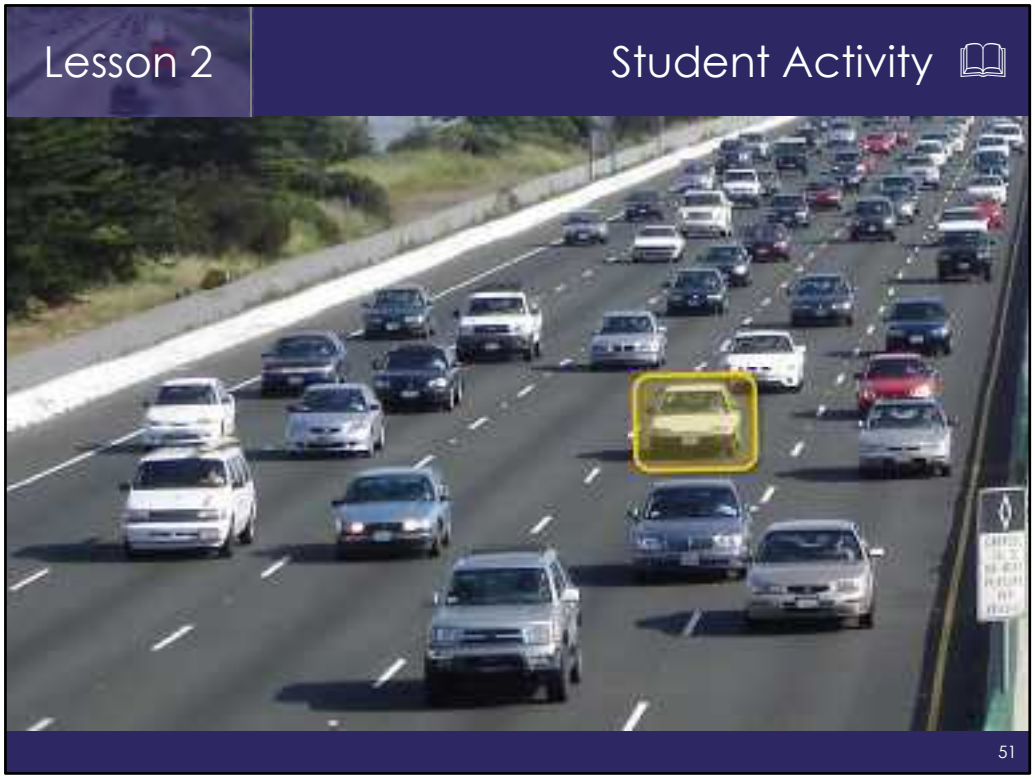
- For highways with four or more lanes, the plain English process for identifying lanes can become confusing, which is why lane numbering may be used for lane identification
- The recommended practice for describing travel lanes involves use of a left-to-right lane numbering system, from the perspective of the flow of traffic
- Either plain English or numbering are acceptable, provided area responders train to both

Lesson Objective: 2.4

- Managed lanes can be thought of as a freeway within a freeway
- Use of the lanes is generally guided by strategies of pricing, vehicle eligibility, and access control, so there are many types of managed lanes
- High occupancy vehicle (HOV), or carpool lanes, have been around since the 1970's
- High occupancy toll (HOT) lanes or Express Lanes have been very successful nationally and are increasingly used
- Specialized TIM programs and procedures have been developed in many places for managed lane facilities
- The lanes that are not "managed" are called the General Purpose, or GP, lanes

Lesson Objective: 2.4

- Note that a managed lane, such as an HOV lane or special toll lane, is not a numbered lane
- The HOV lane shown here should just be referred to as the "HOV Lane"
- "Lane 1" would be the first general purpose traffic lane
- When HOV lanes are only active during certain times of day, they are still referred to as "HOV Lane" 24/7
- It does not matter if the lane is separated by a barrier, poles, or just unique lane markings
- To be as clear as possible, and to avoid confusion, it is recommended that responders specify that they are referring to the general purpose lanes when indicating the lane number



Lesson Objective: 2.4

- **Animation:** Click forward to make yellow box appear

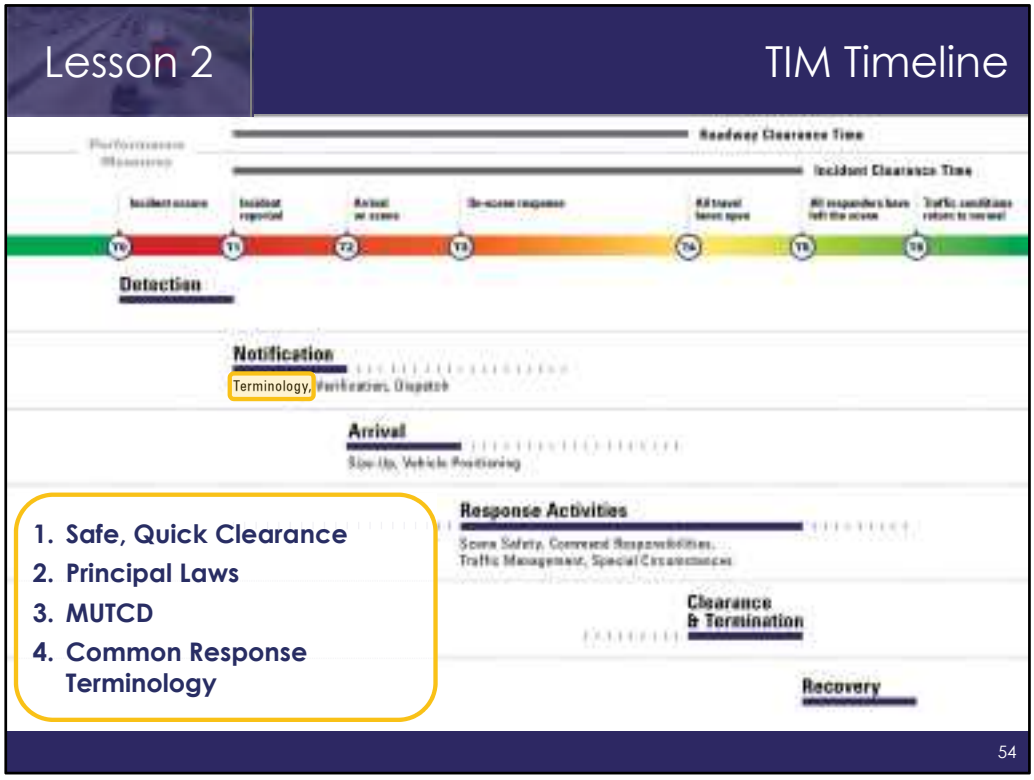
- **Ask/Discuss:** Describe the lane the vehicle highlighted with a yellow box is in using both plain English and the lane numbering system **[Click]**
    - Lane 2

Lesson Objective: 2.4

- Traffic that is departing or past the incident is considered downstream traffic
- Traffic that is entering or approaching the incident scene is considered upstream traffic
- Relate these terms as being similar to how running water flows past a fixed point - upstream and downstream

Lesson Objective: 2.4

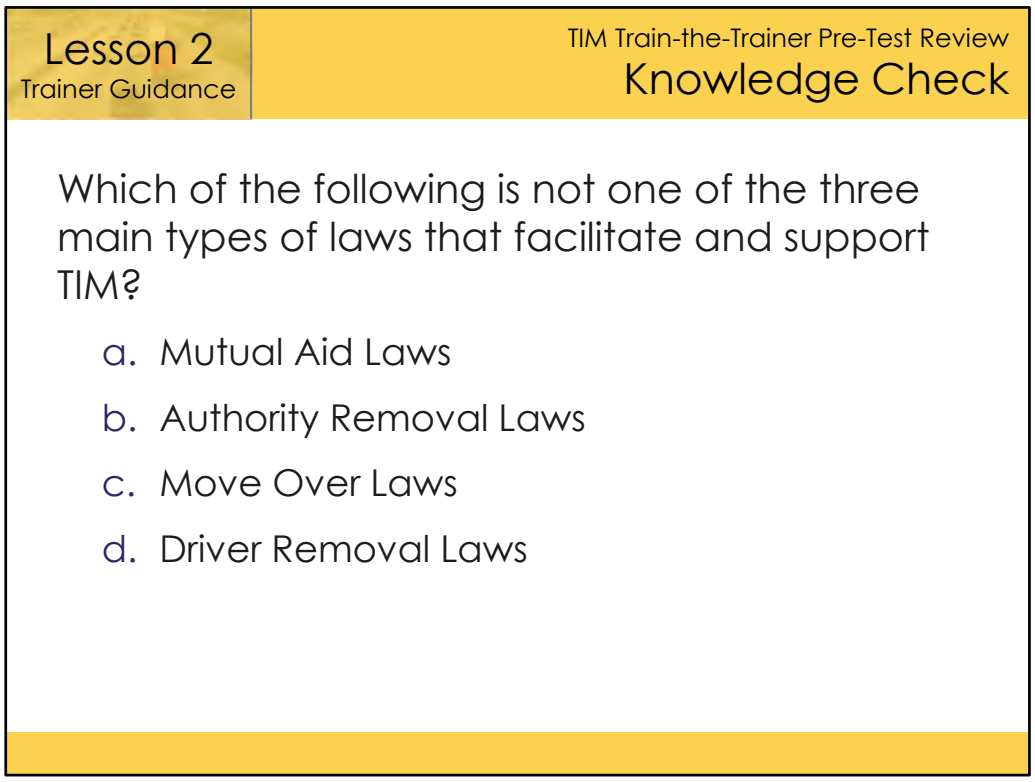
- A traffic queue is the backup of traffic that results from an incident or blocked lanes
- It is pronounced "Q"
- In some areas, the queue is referred to as a backlog of traffic
- A queue may form in either direction of travel because of rubberneckers
- The back of a queue is a very dangerous place
- Responders must mind the back of the queue, which will be discussed in Lesson 7
- Any discussion related to vehicle positioning or blocking should be stopped and deferred to Lesson 4



TIM Timeline | Lesson Objectives Review

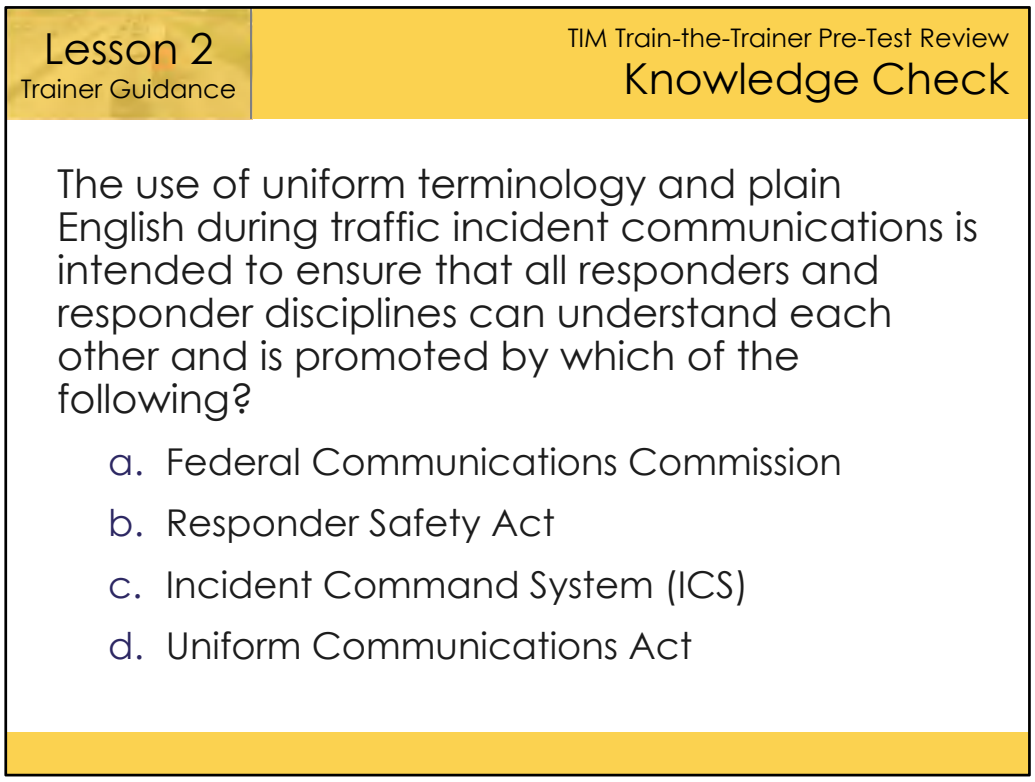
- **Animation:** Click forward to make the small yellow box appear and then click again to bring up the lesson objectives review

- **Ask/Discuss:** How does the use of common terminology impact the TIM timeline?
  - Use of common terminology reduces the potential for misunderstandings among responder groups



Knowledge Check	Correct Answer: a

- **Answer Reference:** Slides 35-41



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 45 (notes)

Lesson 3: Notification and Scene Size-Up

55

Lesson 3

Lesson Objectives

At the conclusion of this lesson, participants will be able to:

1. Recognize the important role **public safety communications centers** play in incident response
2. Describe the **notification and verification** process
3. Recall the typical responsibilities of a **Transportation Management Center** (TMC)
4. List the key information that should be included in a **scene size-up report**

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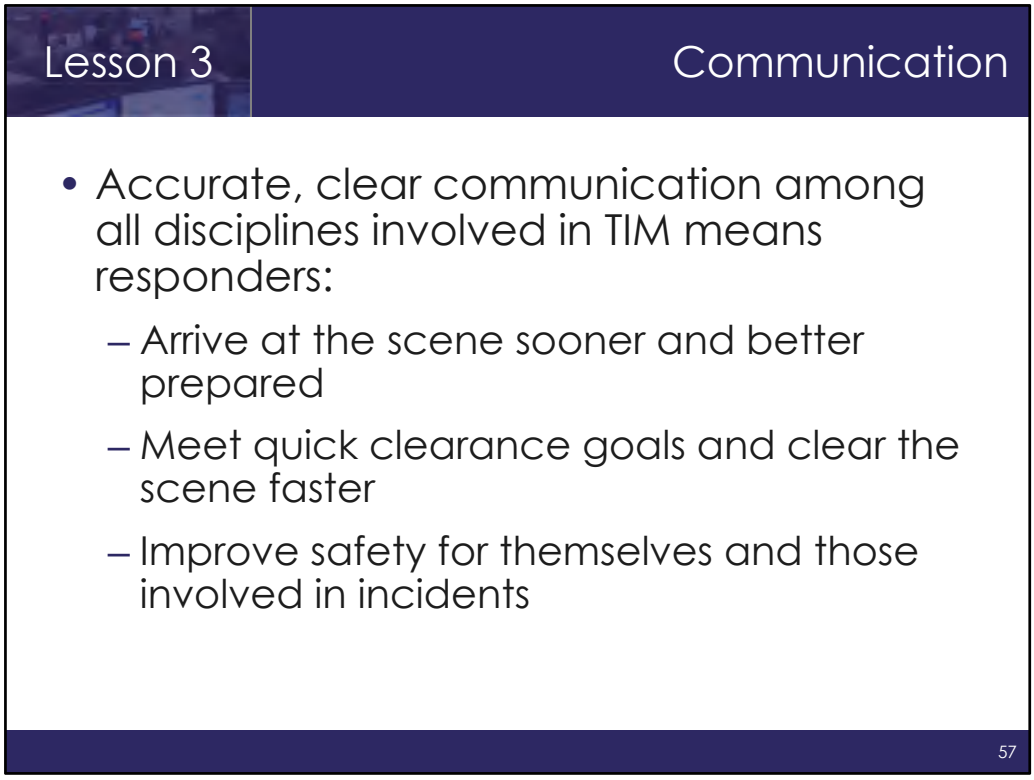

Lesson Objective: --

- Communication is critical to successful TIM and is addressed by the third objective of the National Unified Goal, which is prompt, reliable, interoperable communications
- Effective communications is essential for responder safety

Lesson 3

Detection

- The first step of the TIM process is detection, a term used to refer to the discovery of an incident
- Incident detection can be a call from the parties involved in the incident or a call from a passing motorist
- Incidents may also be detected by responders who happen upon them

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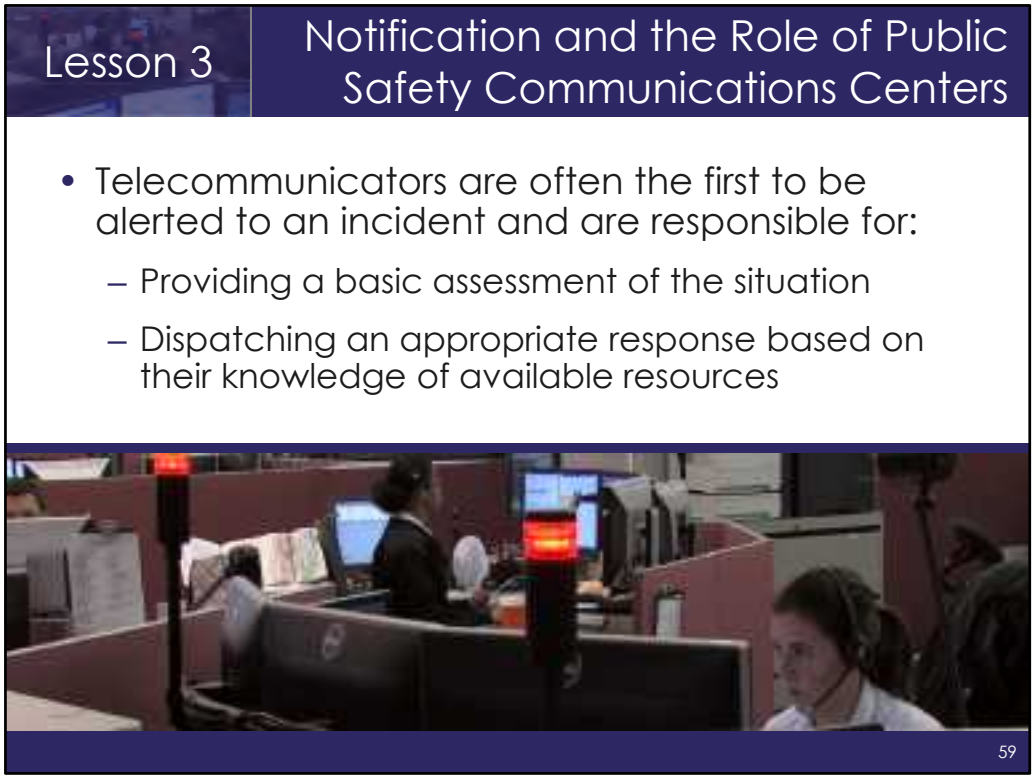
Lesson Objective: --

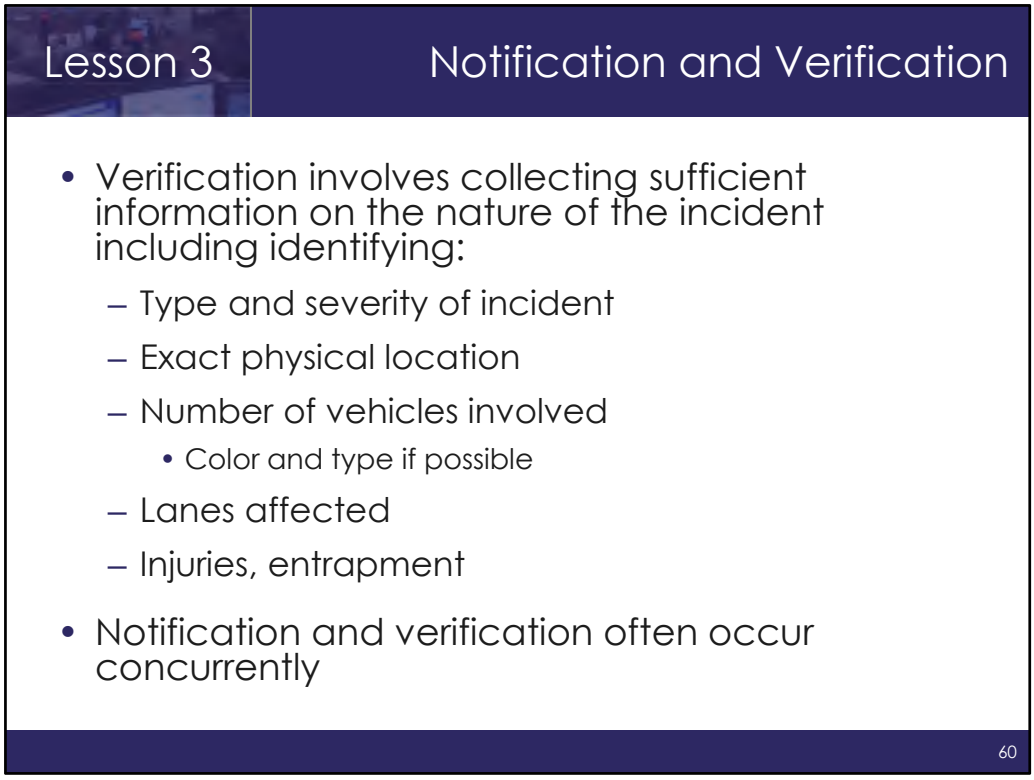
- Highlight the different ways that incidents are typically detected



Lesson Objectives: 3.1 and 3.2

- Telecommunicators (dispatchers) working at public safety communications centers, also referred to as Public Safety Answering Points (PSAPs), are typically the first to receive notification of an incident
- Notification within a communications center occurs both as the center is notified of the incident and as they notify, or dispatch, the appropriate response
- TIM training is very beneficial to telecommunicators, given their important role
- Understanding TIM concepts and terminology ensures telecommunicators are able to assist on-scene responders
- Knowing available TIM resources, including those available through partner agencies, is part of a telecommunicator's basic duties
    - Communications centers are typically responsible for maintaining contact lists and notification procedures for many of the special circumstances that will be discussed in Lesson 8
- The accuracy, timeliness, and overall quality of information received by the communications center has a significant impact on effective TIM

- **Ask/Discuss:** If someone dials 911 in your jurisdiction, who answers?
    - Discuss how information is received and dispatched
    - Discuss how telecommunicators handle receiving multiple calls for one incident
    - Ask if it is possible for more than one communications center to receive calls for the same incident
        - If so, how do these communications centers share information



Lesson Objective: 3.2

- Verification involves collecting as much information as possible from the individual(s) reporting the incident
- Emphasize that the make, model, and color of the involved vehicles can assist responders in locating the incident
    - Vehicle descriptions can also clarify potential duplicate calls or, conversely, separate incidents at similar locations

Lesson 3 Determining the Incident Location

- Telecommunicators should:
  - Ask the calling party to identify the specific geographic location of the incident, referencing highway mile markers, intersection or cross street, landmarks, etc.
  - If applicable, advise motorists of the Driver Removal Law and instruct them to move vehicles off the roadway if there are no injuries

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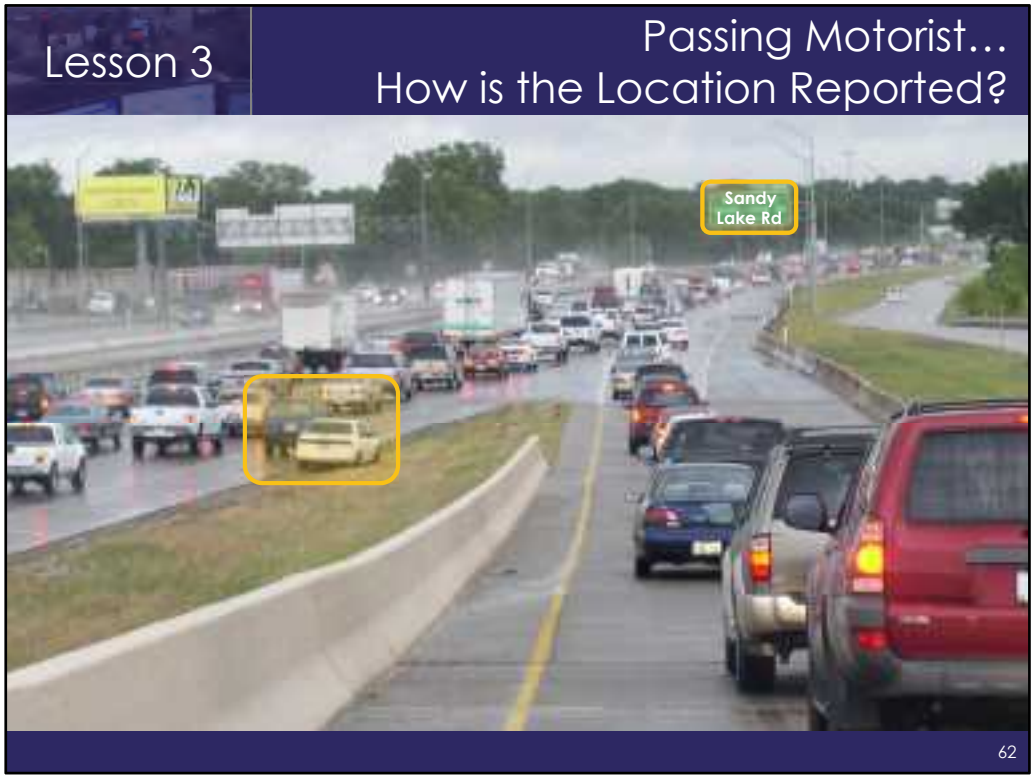
Lesson Objectives: 3.1 and 3.2

- With the proliferation of cellphones, it is often a passing motorist who first notifies a communications center, via 911, that an incident has occurred
- Streets and nearest intersections are the staple for identifying traffic incident locations
- Highway markers and nearest interchange locations are most often used for freeway locations
- Some places use ½ mile while other systems use mile markers every one-tenth of a mile
- Interchange locations present unique challenges – some places have implemented lettering for ramps and flyovers with mile marker type signs indicating the ramp letter
- Landmarks often aid in locating incidents and public safety dispatch systems generally have alias systems to facilitate their use
- A simple TIM strategy at the onset of a call is to direct motorists to remove vehicles from travel lanes if the vehicles are drivable



Lesson Objectives: 3.1 and 3.2

- **Animation:** First click reveals left box around the incident and second click reveals right box around overhead sign

- A caller reported a crash at Sandy Lake Road on a limited access highway
- Windshield view is from a responding vehicle on the on-ramp that has entered the roadway at an upstream interchange and can see a blue and a white vehicle on the shoulder of the road **[Click 1]**
    - Sandy Lake Road is actually a half mile past the green sign seen in the picture **[Click 2]**

- **Ask/Discuss:** What may have happened?
    - Involved motorist may have looked at the sign ahead of them and mistakenly referred to it as their location, rather than indicating they are actually upstream of the exit
    - Caller had traveled downstream by the time they reported the incident
        - Passing motorists frequently report a location that is downstream of the actual incident, especially on limited access highways
    - This incident may be a different or new incident that has not yet been reported

- **Ask/Discuss:** How would you determine if this is the incident you are assigned to?
    - Having vehicle information, such as make/model and color, can assist with verifying that this is the correct incident

- **Ask/Discuss:** If you determine it is the incident you were assigned to, how would you report this incident location to your communications center?

Lesson Objective: 3.3

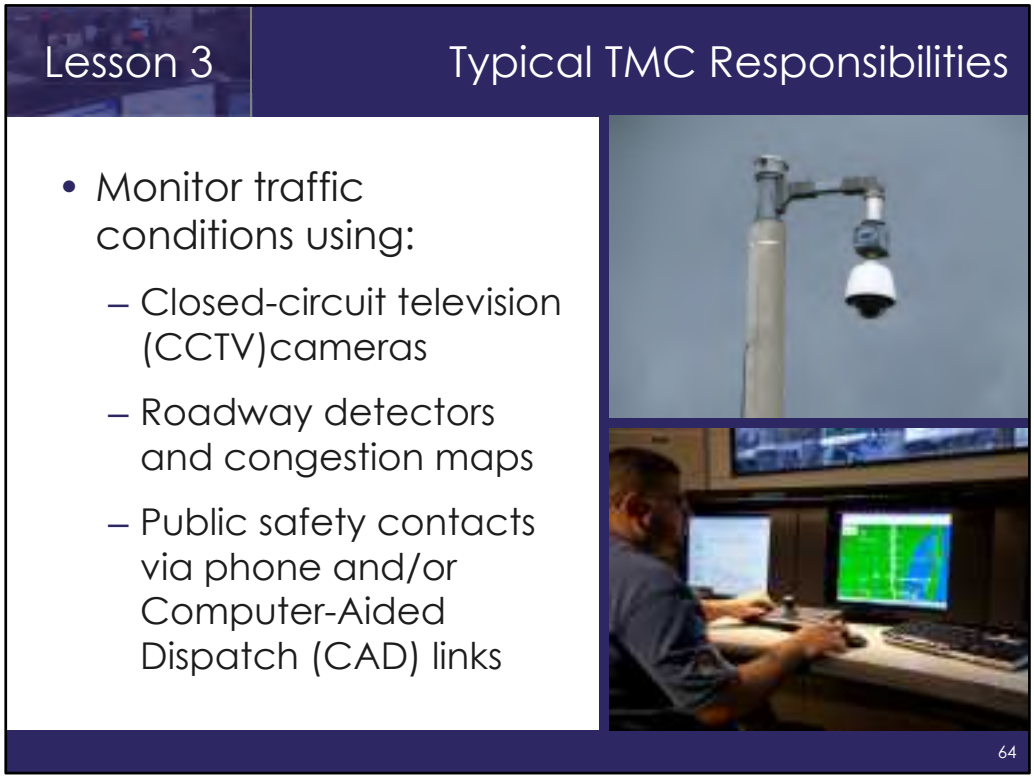
- Transportation Management Centers, or TMCs, are also called Traffic Operations Centers, or TOCs
- TMCs may be operated at the local, regional, or state level
- TMCs serve as the hub for the collection and dissemination of incident information and they play a critical role with incident detection and verification
- In general, TMCs monitor roadway conditions, provide support to motorists and field personnel responding to roadway incidents, and actively manage traffic flow

Lesson 3
Trainer Guidance

Local Customization
TMCs

- It is critical that all responders understand the capabilities of their local TMC
- The following slides should be customized as appropriate
  - Be sure to highlight if your TMC is co-located with a public safety communications center
- Recommend determining if and how local responders can take a tour of the TMC if they are interested
- These slides can be hidden if there is not a TMC near where the training is being conducted

Lesson Objective: 3.3



Lesson Objective: 3.3

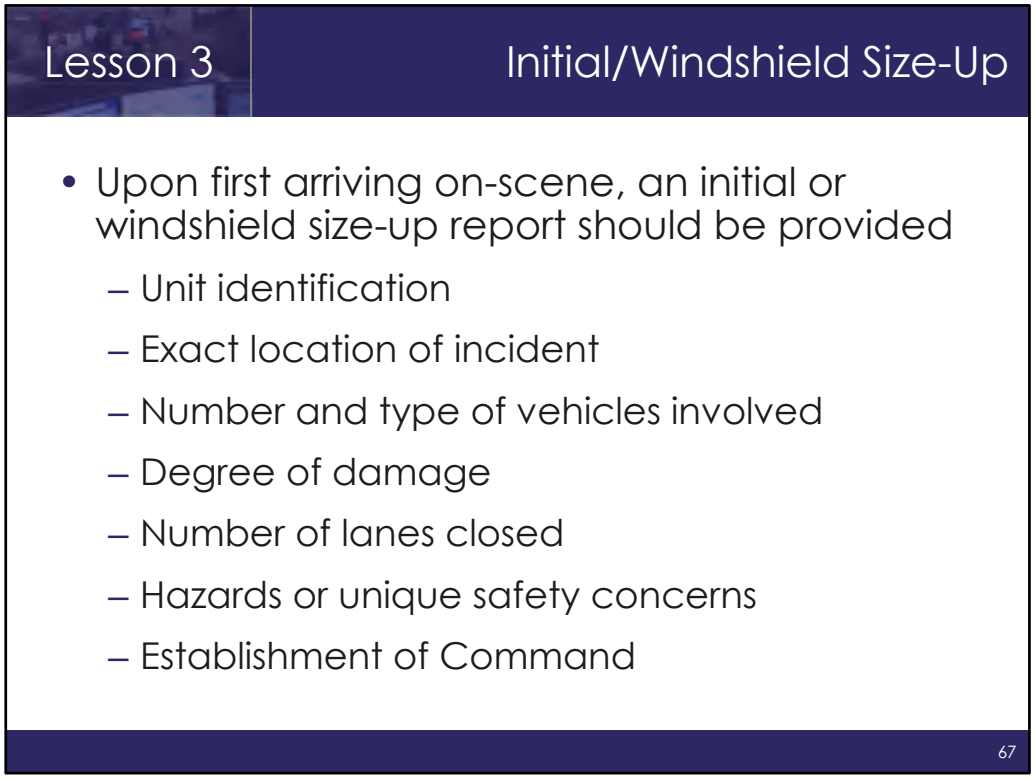
- Briefly review the typical responsibilities of a TMC
- TMCs use systems and software similar to public safety computer-aided dispatch (CAD) systems to create and track incidents
- TMC operators also provide traffic and incident information notification to other traffic management/communications centers, public safety partners, and the news media
- In many areas, the TMC provides real-time video sharing capabilities to their local communications center/PSAP
- Similarly, some communications centers/PSAPs share their CAD data with the TMC
    - This is typically a one-way data flow that is filtered as appropriate to focus on traffic related incidents

Lesson Objective: 3.3

- Changeable message signs (CMS) are also referred to as variable message signs (VMS) or dynamic message signs (DMS) in some areas
- In addition to overhead CMS, some locations have portable CMS available to deploy
- HAR can be in permanent locations and/or may be available through trailer mounted/portable units
- Show the local 511 website if an internet connection is available, or engage students to use smart phones as a class exercise
- In some locations, TMC operators are also able to control traffic management devices such as ramp meters and/or traffic signal systems
- TMC operators also monitor these traffic management devices to ensure they are functioning properly
- Additionally, TMCs are an important part of ensuring that transportation resources and assets are available for incident response
    - Safety Service Patrols
    - Temporary traffic control
    - Traffic diversion
    - Roadway damage inspection

Lesson Objective: --

- **Customization:** If applicable, add a slide after this one that provides basic details (e.g., patrol beats, hours of operation, etc.) for the Safety Service Patrol program in the area where you are instructing



Lesson Objective: 3.4

- Upon first arriving on-scene, an immediate arrival report should be given to the communications center:
  - Confirmation of geographical location
  - Preliminary analysis of current situation
  - Actions required to mitigate the situation
  - Resources required to support those actions
- Should take into consideration any unique safety situations apparent to responders as they arrive on-scene
- This report, typically given while still in the vehicle and viewing the scene through the windshield, is called a windshield size-up
- A more detailed and accurate size-up should be provided after the responder has more fully assessed the scene
- The windshield size-up is a standard practice in the fire discipline, while law enforcement has typically just taken an arrival code on the radio
- All responders, regardless of discipline, should practice passing info back to their respective communications and/or dispatch centers

Case Study Overview and Discussion Points

Struck-By Case Study

- The following video emphasizes the need for responders to accurately relay their location to dispatch
- An officer responds to an incident and is then struck during a secondary crash
- The officer is quite calm despite being pinned under a vehicle, yet is uncertain about her exact location in radio transmissions

Lesson Objective: 3.4

Lesson Objective: 3.4

- **Video:** L3-V1_OH_Scene_Size-Up_Struck-By.wmv

- Emphasize that if the incident location is different than what was originally reported, it must be relayed to the communications center
    - Critical if an emergency were to occur, as shown in this example
    - Also ensures that additional responding units can report to the correct location as quickly as possible
- Highlight that scene safety starts with providing good, accurate location information

Lesson 3 | What Is Your Windshield Size-Up Report?

Typical Fire/Rescue Windshield Size-Up Report:

"Unit one on-scene… location confirmed as Main Street westbound between 2nd and 3rd Ave… Minivan fire, fully involved in the right lane, impacting adjacent sidewalk… Vehicle is leaking fuel… Assuming Main Street command "

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Lesson Objective: 3.4

- Example of a windshield size-up report from a fire department arriving at an incident scene

Lesson Objective: 3.4

- Elements of this arrival size-up report should include the following:
  - Unit identification
  - Exact location of incident
  - Number and type of vehicles involved
  - Degree of damage
  - Number of lanes closed
  - Hazards or problems
  - Establishment of Command

- **Sample Answer:** Unit one on-scene… I-3 northbound, 1 mile north of the Main Street interchange… Small passenger vehicle entangled in the cable barrier system in the grass median … Assuming command on I-3

- Note that cable barrier systems will be discussed further in Lesson 8
  - Any discussion beyond the size-up report should be stopped and deferred

Lesson Objective: 3.4

- Elements of this arrival size-up report should include the following:
  - Unit identification
  - Exact location of incident
  - Number and type of vehicles involved
  - Degree of damage
  - Number of lanes closed
  - Hazards or problems
  - Establishment of Command

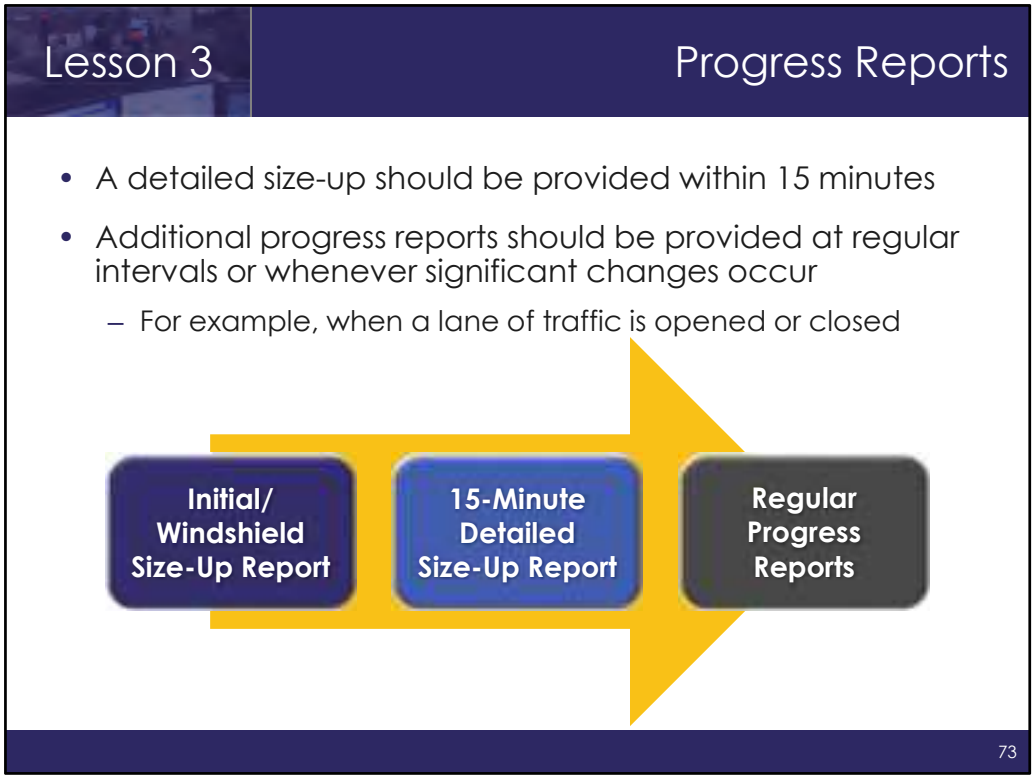
- **Sample Answer:** Unit one on-scene… Main Street northbound, directly in front of the Complex… Two vehicle collision, one vehicle is wrapped around a utility pole… Assuming Main Street command

Lesson Objective: 3.4

- Elements of this arrival size-up report should include the following:
  - Unit identification
  - Exact location of incident
  - Number and type of vehicles involved
  - Degree of damage
  - Number of lanes closed
  - Hazards or problems
  - Establishment of Command

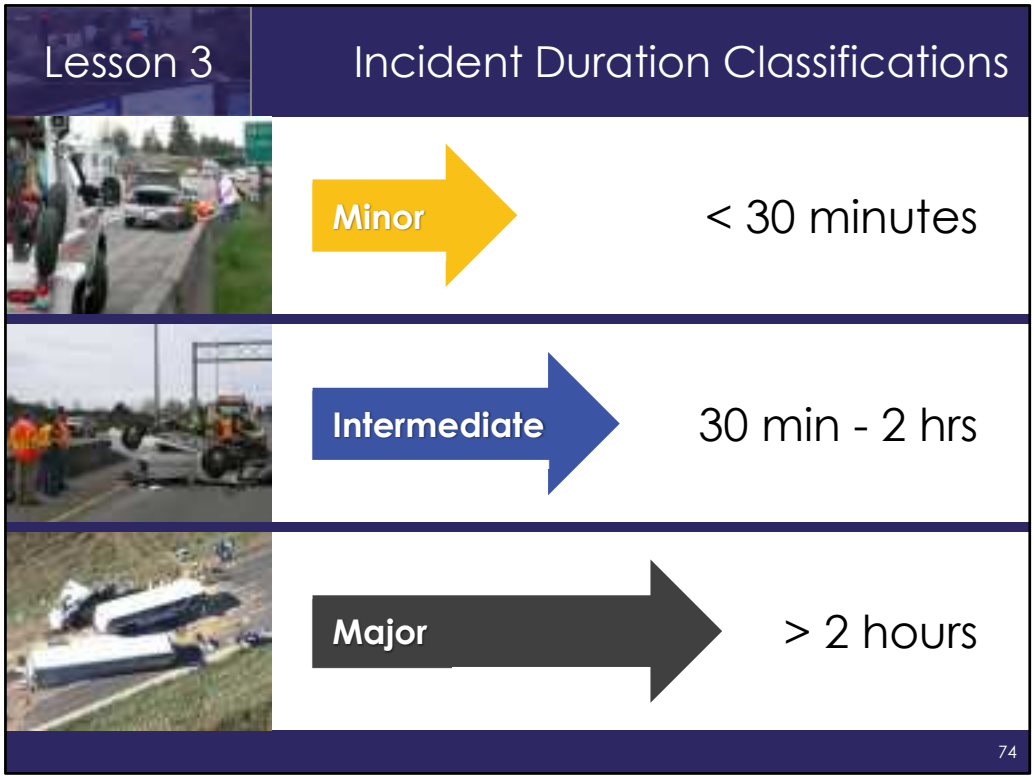
- **Sample Answer:** Unit one on-scene… Intersection of Main and State streets… Jackknifed tractor-trailer… Right lane blocked… Fuel leaking from saddle tank… Assuming Main/State command

- Note that hazardous materials will be discussed further in Lesson 8
  - Stop and defer any discussion about reportable quantities or other hazardous materials response details beyond the scope of an initial size-up



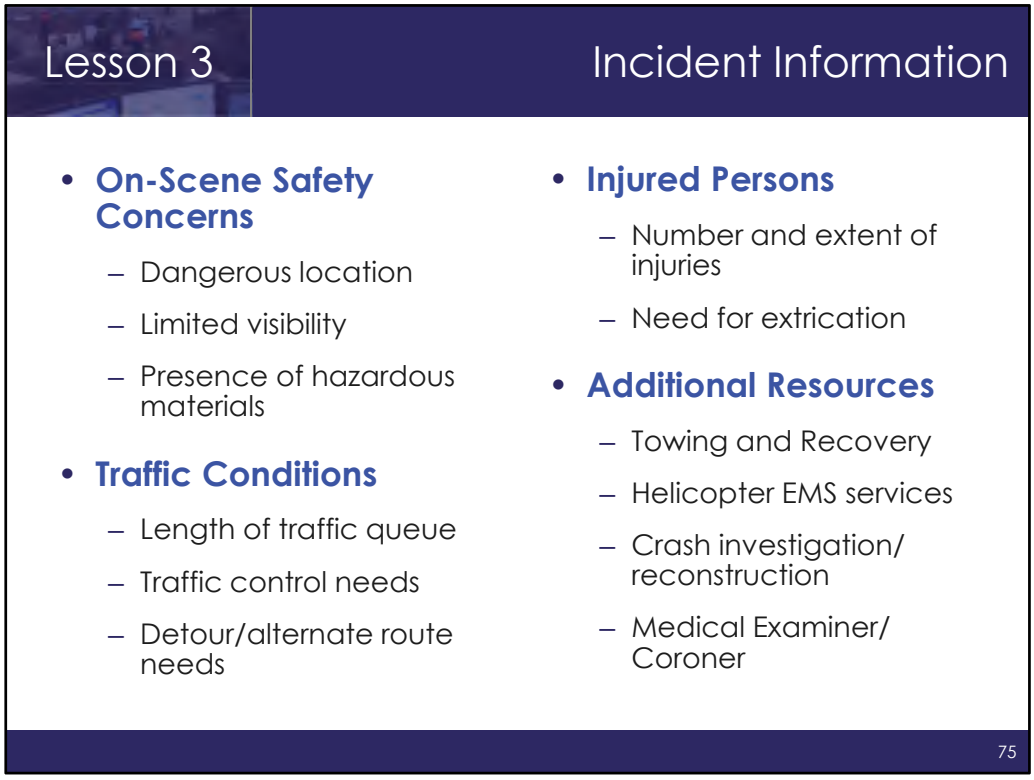
Lesson Objective: 3.4

- The initial arrival/windshield size-up report provides a quick assessment of the scene for dispatch and other responders monitoring the channel
- A more detailed size-up report should be conducted within 15 minutes of arrival at the scene
- For the duration of the incident, progress reports should be communicated at regular intervals, or whenever significant changes occur, to provide an update on how response, traffic management, and clearance activities are progressing



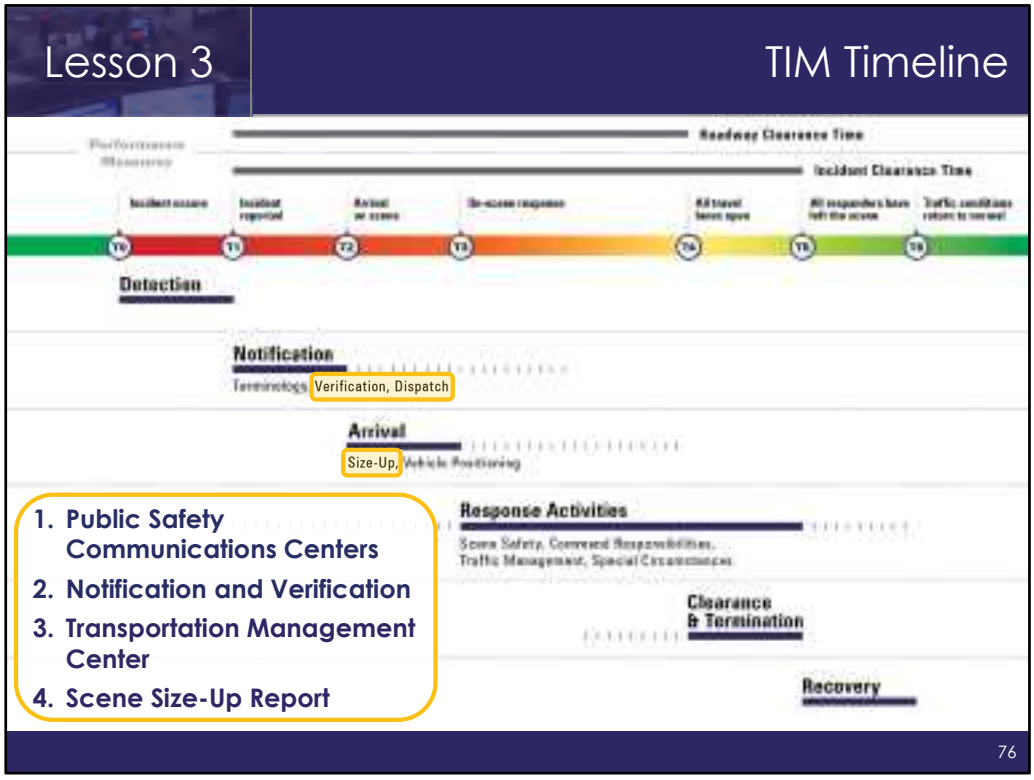
Lesson Objective: 3.4

- MUTCD Chapter 6I divides traffic incidents into three general classes based on duration
- Each of these classifications have unique traffic control characteristics and needs
- The longer you are on the scene, the more that is expected and the more that is required of you and your TIM team
- MUTCD Chapter 6I states that responders arriving at a traffic incident should:
    - Estimate the magnitude of the traffic incident
    - Estimate the expected time duration of the traffic incident
    - Estimate the expected vehicle queue length
    - Set up the appropriate temporary traffic controls based on these duration estimates
        - Short durations requires less resources, while long duration incidents will require more resources
    - Lesson 7 provides a detailed overview of traffic management and temporary traffic control
- If the expected duration is bordering between two classifications, it is recommended that the higher (longer) classification be used to ensure that adequate resources are requested and mobilized
- Note that some states may have additional incident categories that are based on other incident characteristics, such as number of lanes blocked



Lesson Objective: 3.4

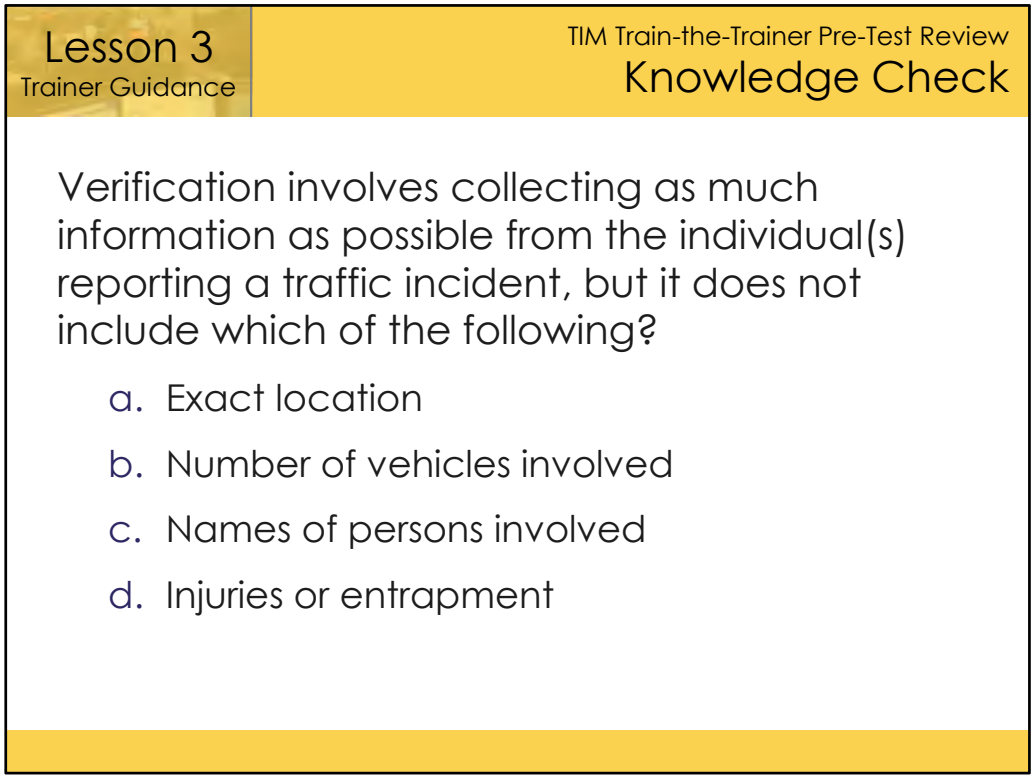
- This slide summarizes important incident information that will likely need to be relayed to the communications center
- It should be highlighted that even if additional resources are not needed immediately, the resource request should be made as soon as possible to ensure timely response
    - For example, even if a crash investigation team is required at the scene, the towing and recovery provider should still be notified early so that they can plan their response



- **Animation:** Click forward to make the small yellow boxes appear and then click again to bring up the lesson objectives review

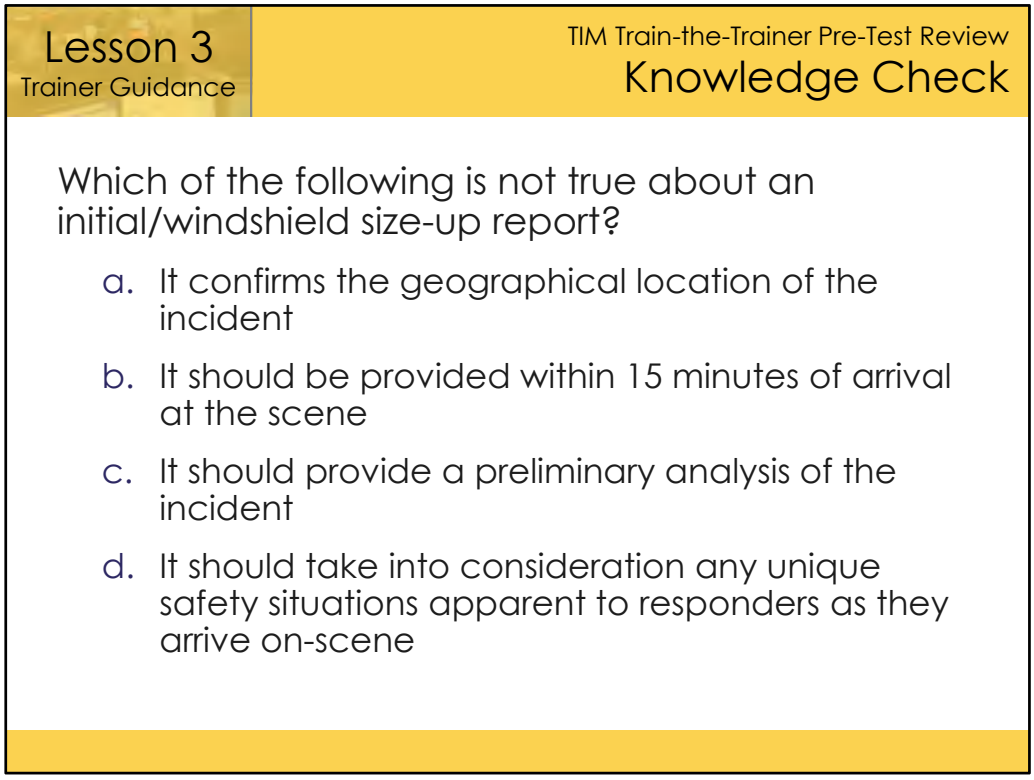
- **Ask/Discuss:** How can notification and verification impact the TIM timeline?
  - It is very important to obtain and provide accurate and concise incident details
  - Locations reported by citizen callers are not always accurate and can delay response

- **Ask/Discuss:** How can the scene size-up impact the TIM timeline?
  - An accurate windshield size-up report can help to ensure later arriving units have the correct location and are aware of any safety concerns



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 60



Knowledge Check	Correct Answer: b

- **Answer Reference:** Slide 67

Lesson 4:
Safe Vehicle Positioning

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Lesson 4

Lesson Objectives

At the conclusion of this lesson, participants will be able to:

1. Differentiate between **Move It and Work It** incidents
2. State the MUTCD definition of **safe-positioned** and describe **blocking**
3. Define **Lane +1 blocking** and describe the need for it

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Lesson 4
Trainer Guidance

Potential Hot Topic

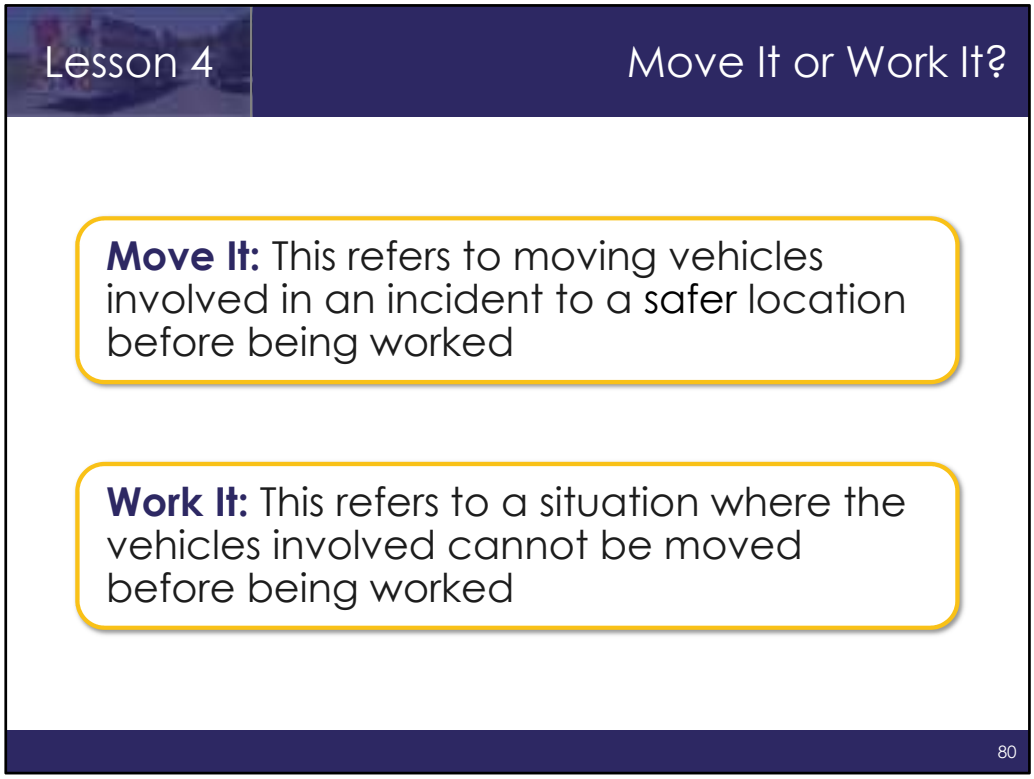
Vehicle Positioning Preface

- Vehicle positioning is traditionally where law enforcement and fire/rescue professionals might have different views
- Emphasize that meeting in the middle is possible and an objective of Lesson 4
- Encourage participants to have open minds as they go through the lesson because the end result will represent national best practices

Lesson Objective: --

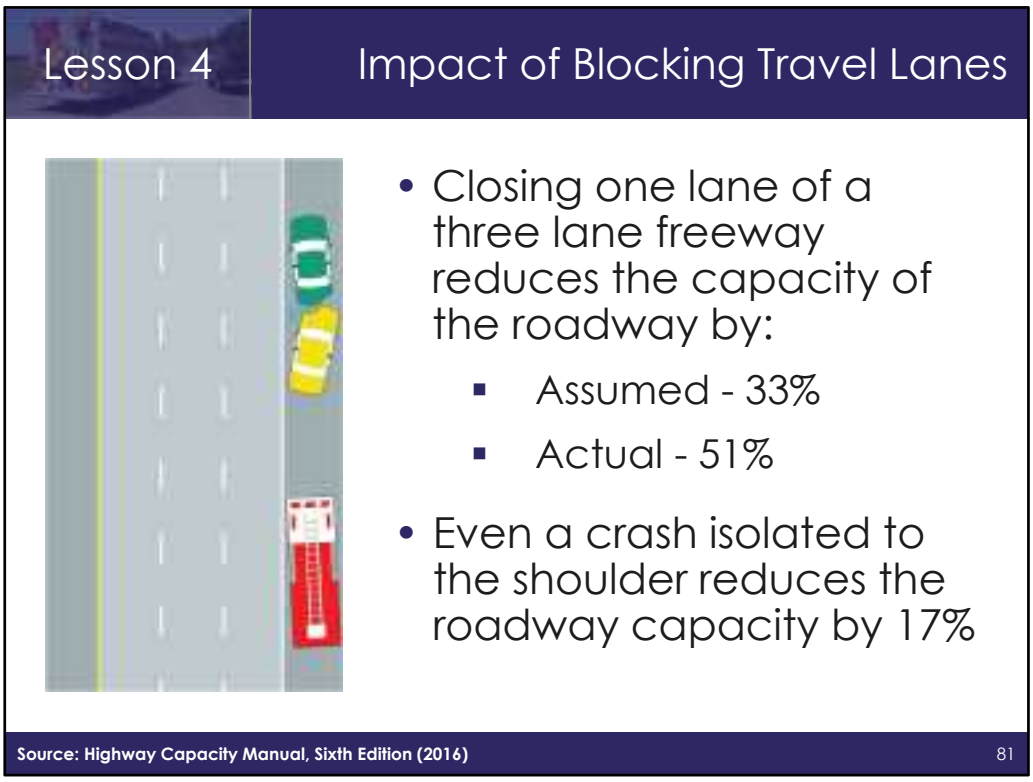
Lesson Objective: 4.1

- The windshield size-up upon your arrival sets the stage for early decisions that are made at traffic incidents
- Every time you arrive at an incident scene, you have to make a choice to either Move It or to Work It



Lesson Objective: 4.1

- Depending on the situation, Move It may mean relocating involved vehicles to the shoulder or median, or ideally to a location completely off the roadway such as a parking lot
- Incidents involving the following typically require a Work It approach, at least initially:
    - Injuries, entrapments, or fatalities
    - Hazardous materials
    - Vehicle fires



Lesson Objective: --

- **Animation:** Click forward to make first sub-bullet appear, click again for second sub-bullet, and click a third time to move vehicles to the shoulder and make last bullet point appear

- **Ask/Discuss:** Closing one lane of a three lane roadway reduces the capacity of the roadway by how much?
  - It is often assumed that the impact of closing a lane is equal to dividing 1 by 3 **[Click 1]**
  - But the impact of closing one out of three lanes is much more significant **[Click 2]**

- The teaching point of this slide is that the impacts of incidents are not mathematically proportional to the physical blockage of lanes
  - One lane blocked out of three is not a 33% reduction in flow; it is a 51% reduction
  - This is one reason it is important to consider if an incident can be moved

- **Ask/Discuss:** How do you explain this phenomenon?
  - Driver distraction
  - Lane changing/merging traffic
  - Rubberneckers passing the scene

- Highlight that even an event on the shoulder reduces the roadway capacity **[Click 3]**
- Transportation engineers use the Highway Capacity Manual to measure the efficiency of roadways

Lesson Objective: 4.1

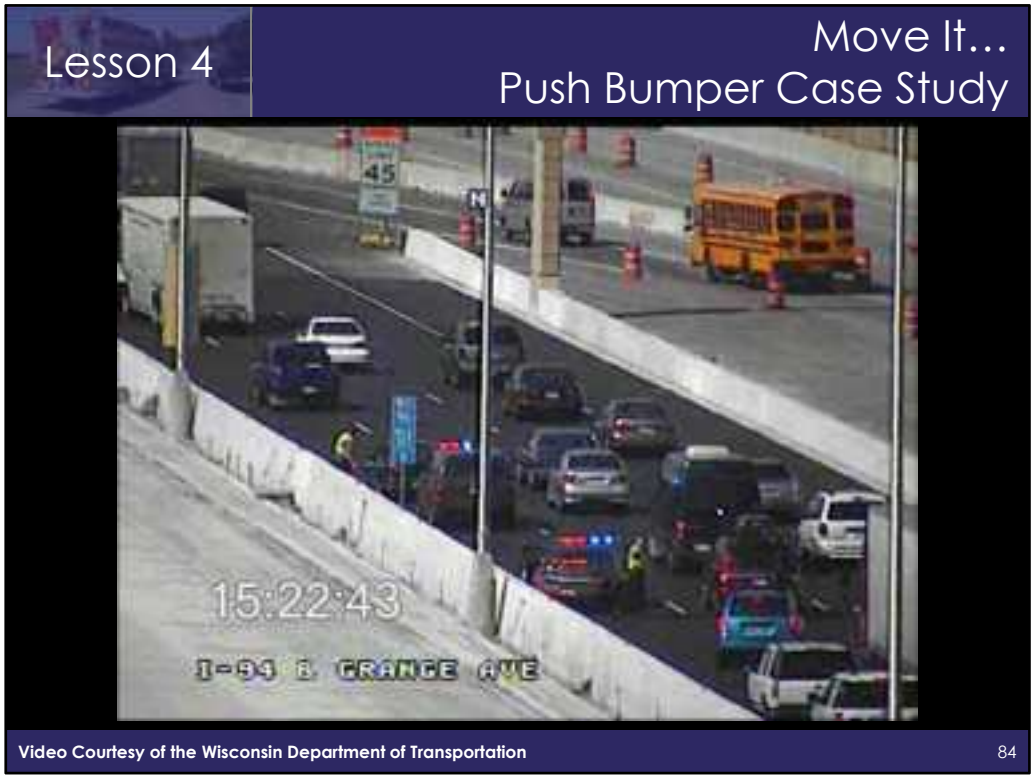
- **Animation:** Click forward to reveal bottom text box

- **Ask/Discuss:** Is this a Move It or Work It incident?
    - This is an example of a Move It incident if the vehicles are vacated and can be driven or pushed
    - This could be an example of a Work It situation if an injured person were still inside one or both of the vehicles
    - This could be an example of a Work It situation if the vehicle was leaking fluids or if a vehicle was on fire

- When possible, moving the incident is preferred since it clears the incident from the roadway, obstructs traffic less, and reduces the exposure of both responders and involved motorists **[Click]**
- Move It is a very effective quick clearance strategy

Lesson Objective: 4.1

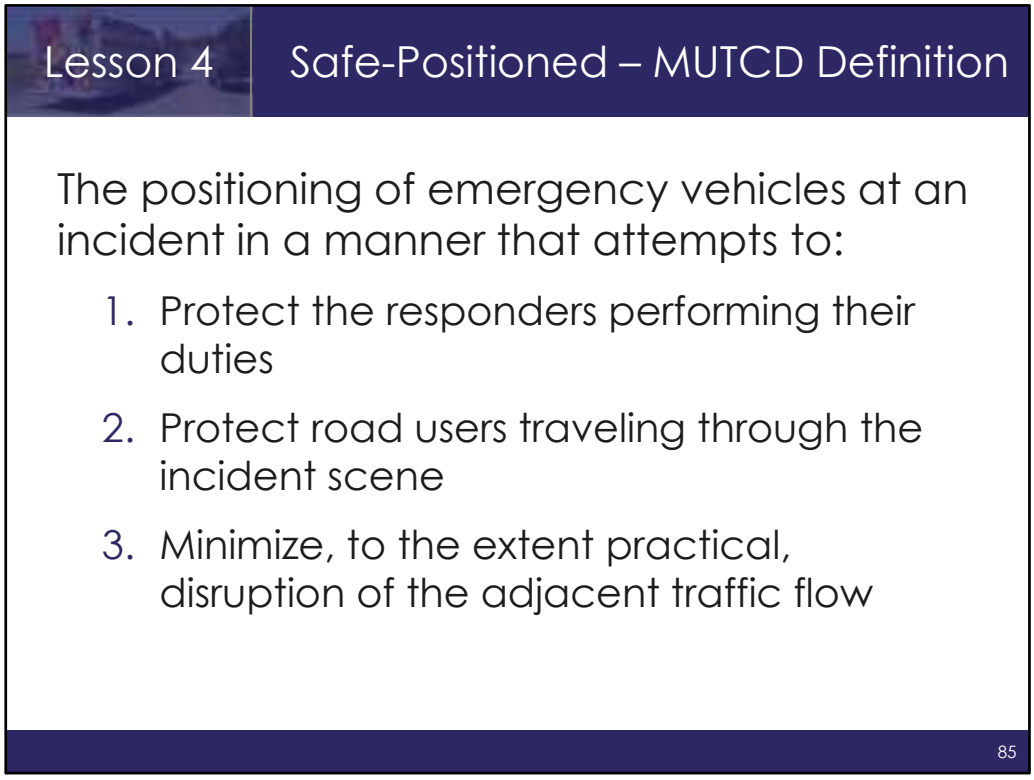
- Sometimes the simplest solution is to drive or steer an incident vehicle out of the roadway
  - Instruct drivers to move their vehicle out of travel lanes upon arrival
  - Responders with the appropriate license can drive a vehicle out of travel lanes for an injured party who has been transported
- Responders and others on the scene can work together to physically push an inoperable vehicle out of travel lanes
  - Vehicles on an incline can sometimes be easily rolled (even backwards) to get them out of the roadway
- Push bumpers can be used to move disabled vehicles out of traffic lanes
  - Some places equip responder vehicles with push bumpers, but discourage or even prohibit their use in deference to the potential to cause damage or incur liability
  - Recall that the Authority Removal Law in many states has a hold harmless component
  - The cost-benefit of a scratched bumper far outweighs a more significant loss if a secondary crash occurs
  - Responders and their vehicles are at risk when push bumpers are not used and they must work an incident in or near moving traffic
- Tow capable vehicles might be able to pull or drag a disabled or damaged vehicle to the shoulder and out of travel lanes
  - Responders are cautioned about using tow ropes or other devices if not trained
- Vehicles may have a fuel shut/cut off switch that may need to be reset in order to move it
  - Towing and recovery professionals and/or Safety Service Patrol operators are often a good resource for these types of situations



Lesson Objective: 4.1

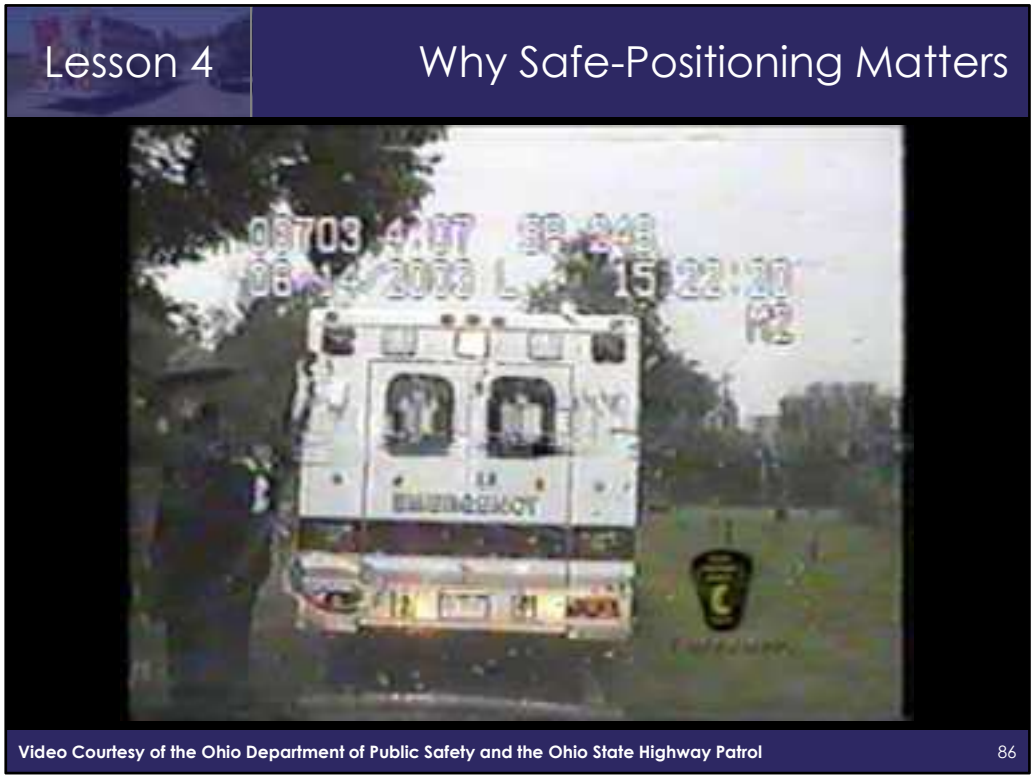
- **Video:** L4-V1_WI_Move_It.wmv

- This video from Wisconsin shows officers utilizing a push bumper to relocate a disabled vehicle from the travel lanes to a paved shoulder
- Highlight the coordination between the two officers



Lesson Objective: 4.2

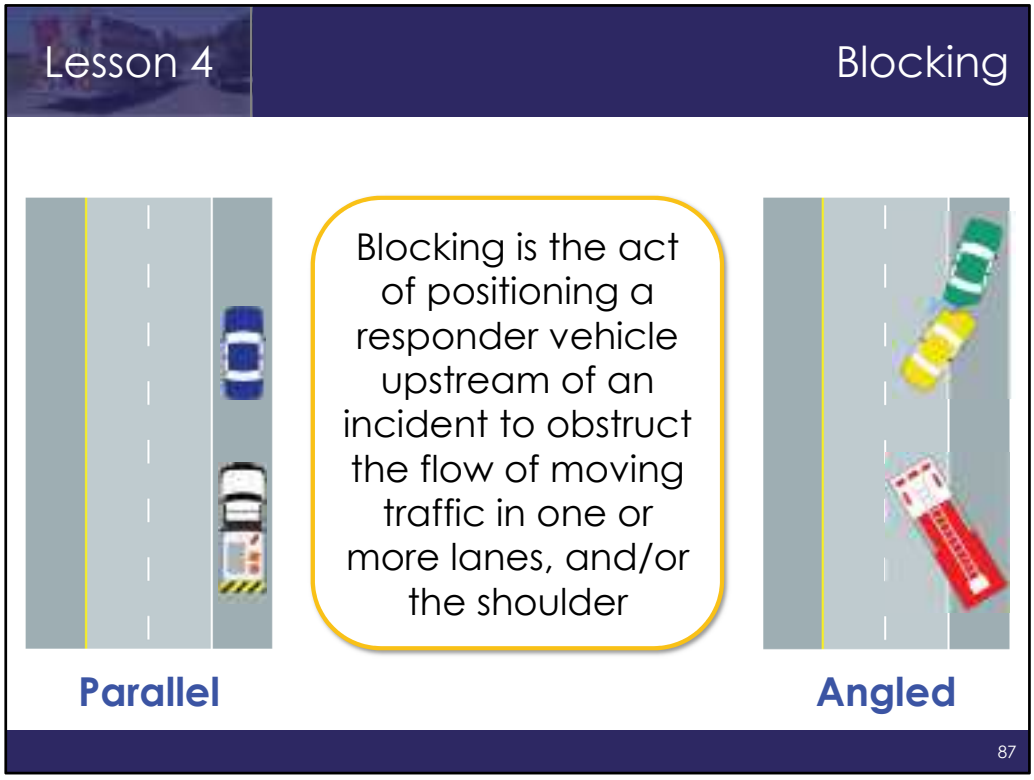
- Positioning emergency vehicles to establish a safe work area is another foundational decision for responders arriving at an incident scene
- Vehicle positioning is a critical element to protecting both emergency responders and motorists



Lesson Objective: 4.2

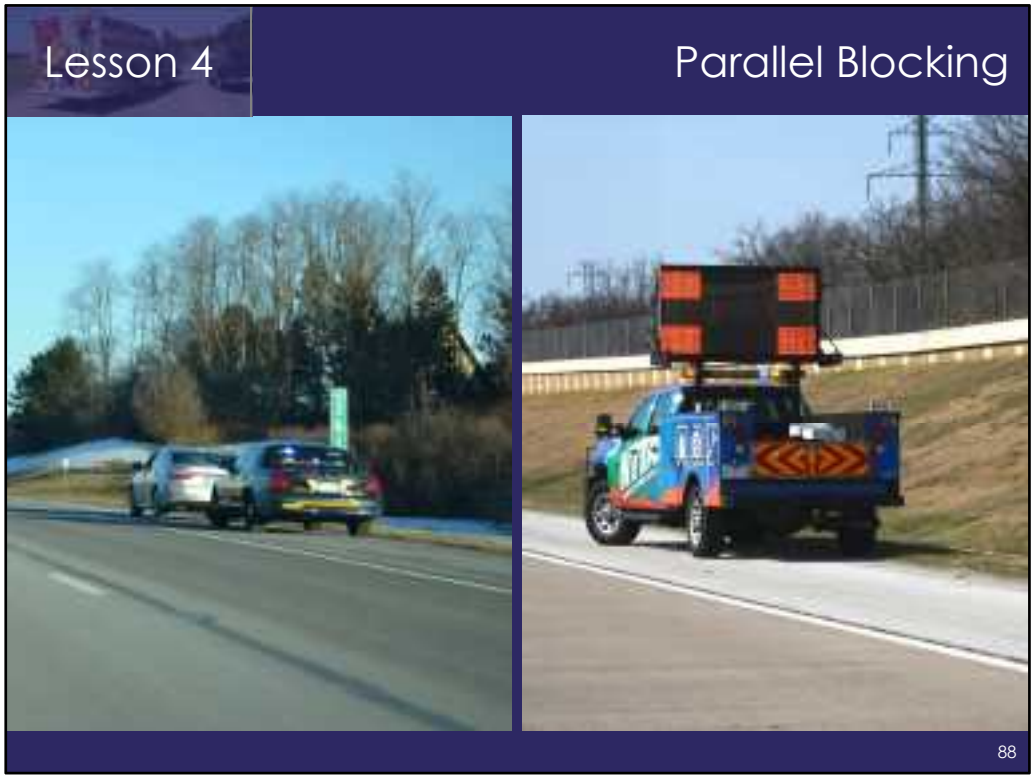
- **Video:** L4-V2_OH_Ambulance_Struck-By.wmv

- **Ask/Discuss:** Debrief the video
  - Reiterate that regardless of where an incident occurs – urban or rural roadway, high speed or low speed – there is always the "D" Driver danger
  - Vehicle positioning is a critical aspect of improving scene safety



Lesson Objective: 4.2

- The first emergency vehicle that arrives at an incident scene is responsible for positioning their vehicle as an initial block
- Any responder vehicle can provide a block
    - EMS vehicles should serve as the blocking vehicle only if they are the first to arrive at the incident – this will be discussed in more detail shortly
- The shoulder of a highway is considered a lane when establishing a block
- Blocking creates a barrier between traffic and the incident scene where responders are working
- Blocking begins with just those lanes that are involved in the incident, including the shoulder
- Blocking vehicles should be positioned upstream of the incident scene so that:
    - There will be sufficient distance for the vehicle to roll-ahead without hitting the incident area should it get struck
    - But not so much so that errant vehicles will travel around the blocking vehicle and strike working responders
- Blocking can be accomplished with the responder vehicle parallel to travel lanes or angled



Lesson Objective: 4.2

- These photographs illustrate parallel blocking by a law enforcement vehicle and a Safety Service Patrol vehicle
- While both are on the shoulder, parallel would also describe this type of positioning if they were in a travel lane
- This position maximizes some types of emergency vehicle lighting, particularly where responder vehicles use vehicle-mounted arrow boards or message boards

Lesson Objective: 4.2

- Example of parallel blocking in a residential neighborhood
- Recall that in this type of setting, the objective is to only take as much space as is needed, allowing local traffic to pass
- If questioned, note that responders would not be required to wear high-visibility safety apparel in this situation because they are responding to a residence

Lesson Objective: 4.2

- Example of law enforcement vehicles that are angled, but still positioned mostly within the width of a single travel lane
- The vehicle angle, as shown here, provides motorists a more effective visual cue that the vehicle is not moving
- In this case, the angle of the patrol vehicle also guides motorists to merge or taper into the available left lane

Lesson Objective: 4.2

- **Animation:** Click forward to make text box appear

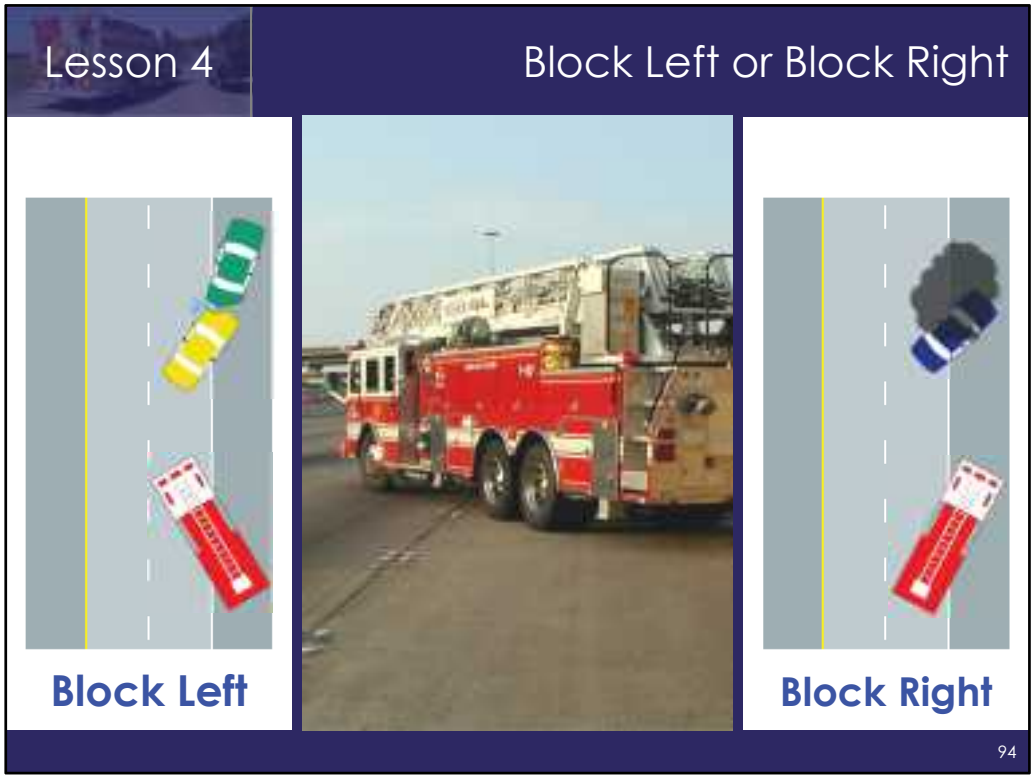
- Responder vehicles can also be positioned at an angle to block multiple lanes
- The vehicle angle, as shown here, provides motorists a more effective visual cue that the vehicle is not moving
- In this case, the angle of the responder vehicle also guides motorists to merge or taper into the available right lane
- There is no "magic number" with respect to the degrees of the angle of the block, it needs to be sufficient to get the job done
- Operators of responder vehicles must be aware that angling the vehicle may reduce, or eliminate, the effectiveness of both emergency lighting and emergency vehicle markings located on the back of the vehicle
- Reiterate that any responder vehicle can provide a block, but large, heavy vehicles typically provide the best blocks **[Click]**

Lesson Objective: 4.2

- Example of a fire truck that is using an angled blocking position on a rural road

Lesson Objective: 4.2

- The top picture highlights why it is important to block the shoulder when positioning vehicles at an incident scene
- It is critical to protect any area where responders may be working or standing
- Vehicles may travel intentionally or unintentionally around a responder vehicle on either side or in an unpredictable manner
- Emphasize the "D" Driver risk



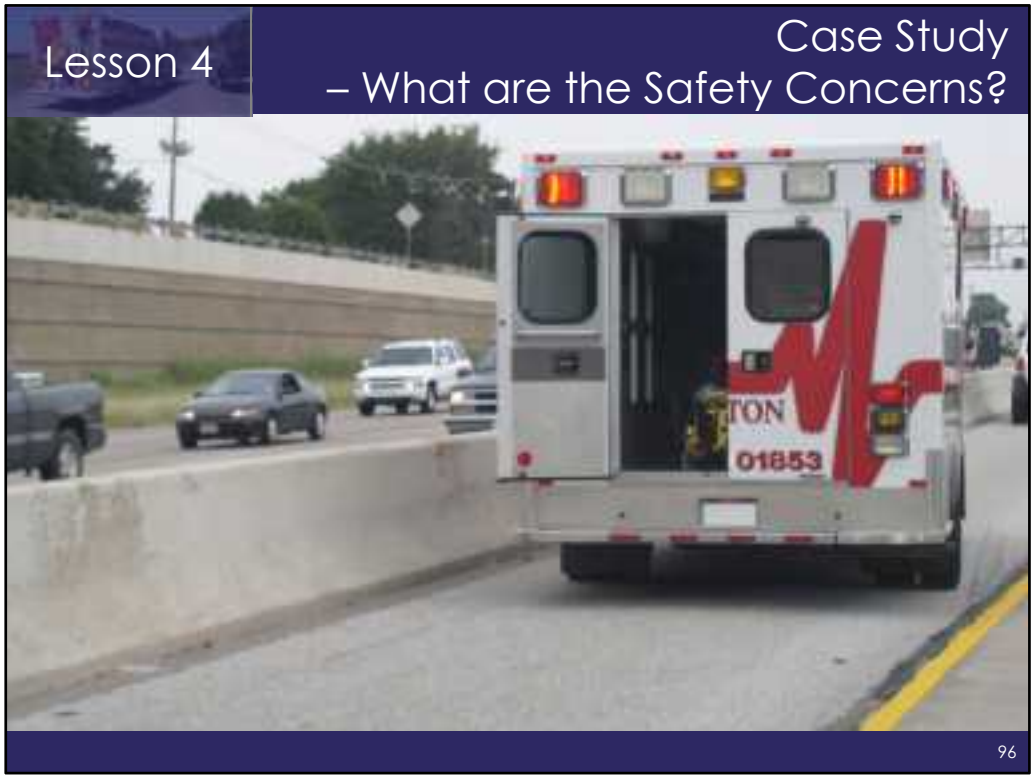
Lesson Objective: 4.2

- **Animation:** Click forward once to make 'Block Left' appear, click again to change picture and bring up right graphic, click a third time to make 'Block Right' appear, then click a final time to make the pump panel picture appear

- A block can be to the left or the right
- The decision to block left or right is dependent upon the type of incident, responsibilities of the responding unit, and circumstances of the incident
- Blocking towards available travel lanes provides a visual cue to approaching traffic **[Click 1]**
- When using a fire apparatus, if there is an operator on a pump panel or similar situation, that individual needs to be protected by the block **[Clicks 2-4]**
- Agency policy should be followed when making the decision to block left or block right

Lesson Objective: 4.3

- Provide the following case study details:
  - The ambulance has responded to a medical emergency in a white SUV which has parked on the left shoulder
  - The driver is slumped over the wheel
  - Access via the driver's side door is obstructed since the vehicle is parked so close to the center divider barrier
  - Law enforcement is in a parallel blocking position upstream of the ambulance



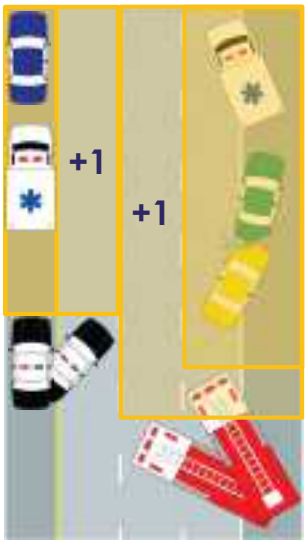
Lesson Objective: 4.3

- **Ask/Discuss:** What safety concerns do you see with this operation?
  - Since it is not possible to remove the vehicle occupant via the driver's door, this will have to be accomplished through the passenger side, meaning that EMS responders will be directly exposed to moving traffic since no travel lanes have been closed
  - Think about how they would bring a stretcher to the patient – they essentially have to walk in a moving lane of traffic
  - Due to the challenge of loading a patient into an ambulance, EMS personnel will have all their attention focused on that task and will consequently have their backs turned to traffic and be unable to monitor approaching traffic
  - Due to the limited space available to work, the time needed to complete response activities will be increased

- In this situation, it is recommended that Lane 1, or the left lane, be blocked in addition to the left shoulder to provide a safer work environment for the responders and the patient
- Note that to this point all blocking examples have only closed the lanes involved in the incident, which may also be referred to as linear blocking

Lesson 4 — Lane +1 Blocking

- By the very nature of fire/rescue and EMS work, additional space to work is typically required
- Lane +1 blocking occurs when responders block the involved lane(s) (including the shoulder) plus one additional lane to provide a protected lateral space for safety



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Lesson Objective: 4.3

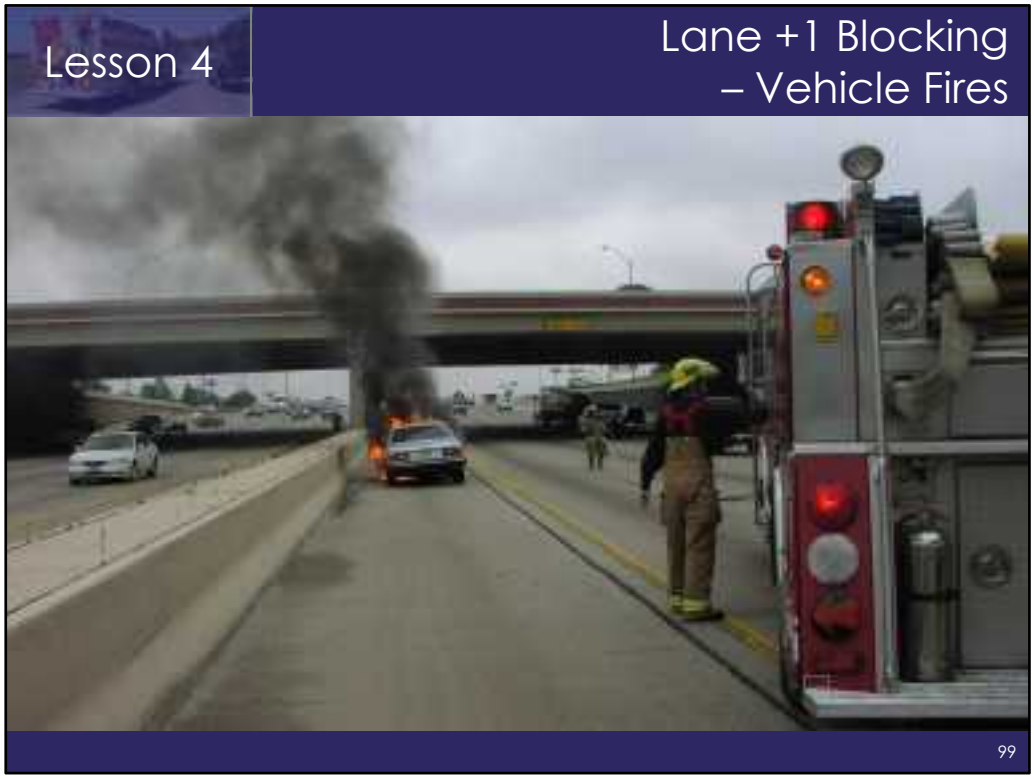
- **Animation Sequence 1 – Left Side:** Click forward once to make small yellow box appear to highlight the protected area, click again to move law enforcement vehicle into Lane +1 blocking position, click a third time to make larger yellow protected area appear

- **Animation Sequence 2 – Right Side:** Click forward once to make left side vehicles disappear and right side vehicles appear, click again to make small yellow box appear to highlight the protected area, click again to move fire apparatus into Lane +1 blocking position, click a final time to make larger yellow protected area appear

- To ensure responder and motorist safety, it may be necessary to close additional lanes for a short time
- This protocol, where one additional lane is blocked in order to increase safety for actively working responders, is referred to as Lane +1 blocking
- Use of the Lane +1 blocking protocol creates an adequate incident/work space for responders that is protected against moving traffic
- For the previous case study, the law enforcement vehicle could have repositioned to block Lane 1 and provided Lane +1 blocking **[Animation Sequence 1]**
- As a second example, if extra space was necessary for safety, the fire apparatus can reposition to block Lanes 2 and 3 to provide Lane +1 blocking **[Animation Sequence 2]**
- Highlight that in both situations Lane +1 blocking could be better achieved if more responder vehicles were available on scene
    - In both examples, it is difficult for one vehicle to completely block the shoulder and the necessary lanes

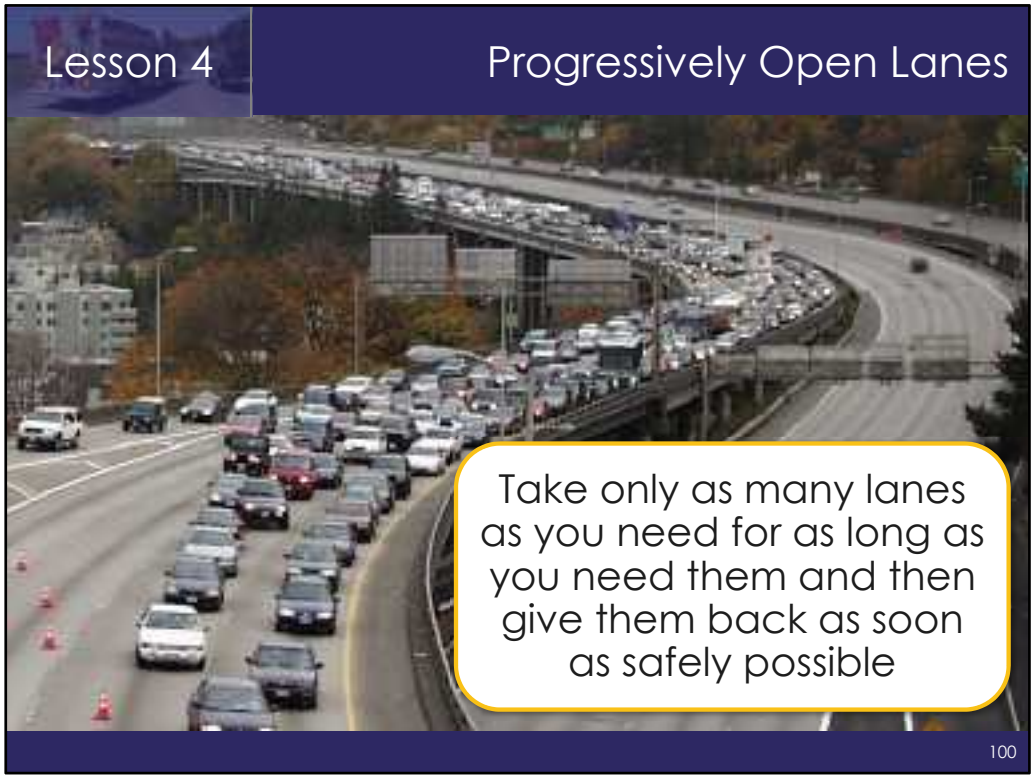
Lesson Objective: 4.3

- Example where the extra space created by Lane +1 blocking is needed
- It is not possible to safely remove a person from a vehicle on a long board confined to one 12-foot wide lane
- Fire and EMS personnel need additional room to work during patient treatment and patient movement
- Lane +1 blocking allows EMS providers to focus on the patient and not be distracted by moving traffic being so close to them
- Once the patient is loaded, vehicle positioning should be re-assessed to determine if the extra lane can be opened back up



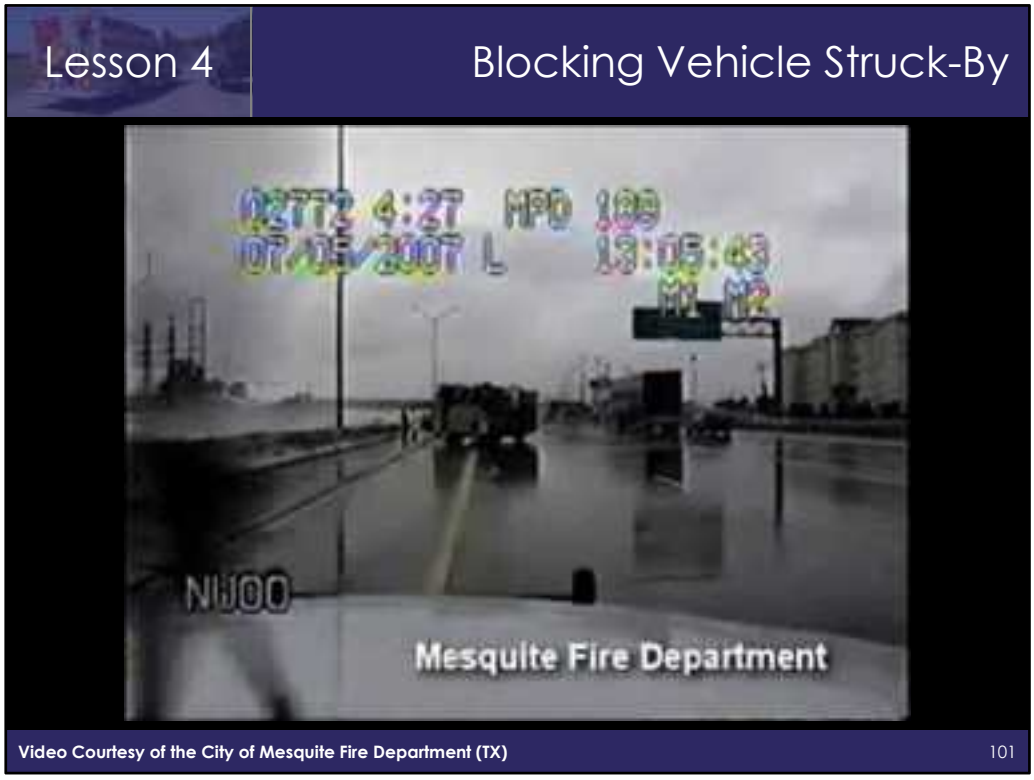
Lesson Objective: 4.3

- Lane +1 blocking is also beneficial in the case of vehicle fires where an off-angle approach is needed for firefighter safety
- Similarly, Lane +1 blocking is useful for vehicle extrication and certain HAZMAT situations
- Lane +1 blocking is not just for fire and EMS, Lane +1 should be used anytime a responder needs additional lateral space to do their job.
    - A law enforcement investigator who may need to take measurements or photograph the scene
    - A tow truck operator who may need to secure a chain or operate controls
    - A Safety Service Patrol operator who may need to refuel a vehicle on the traffic side
- Note that vehicle fires may require more than one additional lane and are covered in more detail in Lesson 8



Lesson Objective: 4.3

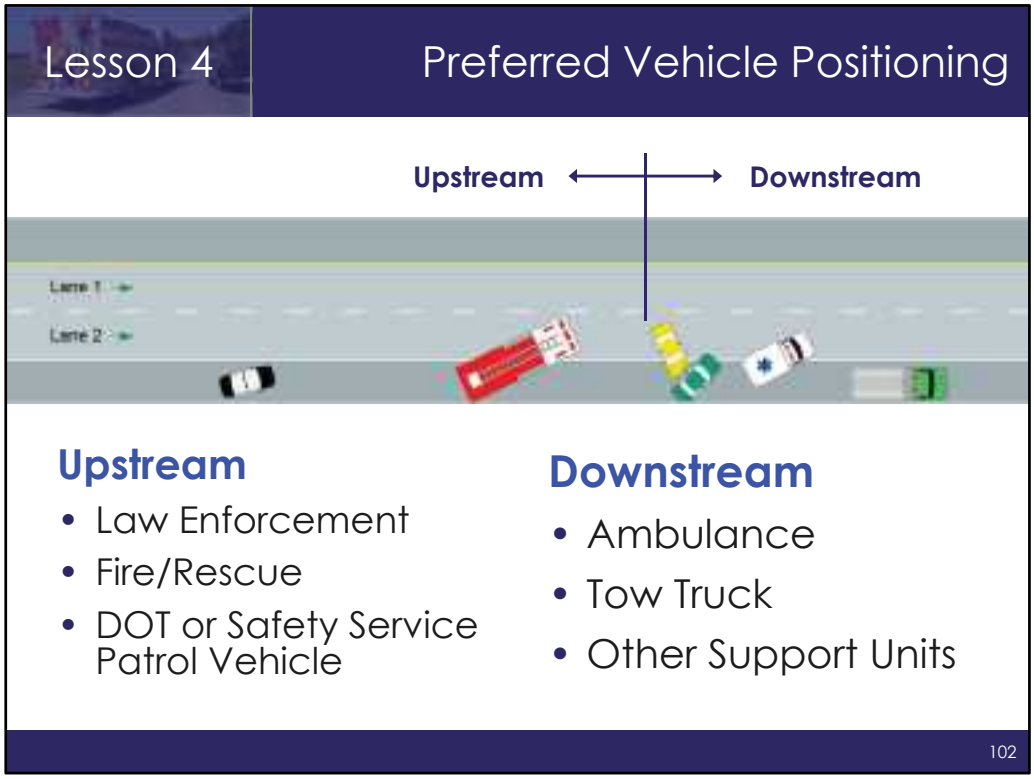
- Once response activities no longer require the extra space for safety, Lane +1 should be reduced to blocking involved lanes only
- Safe-positioning of vehicles includes minimizing, to the extent practical, disruption of the adjacent traffic flow
    - Emphasize that this goes back to motorist safety and reducing the likelihood of secondary crashes



Lesson Objective: 4.2

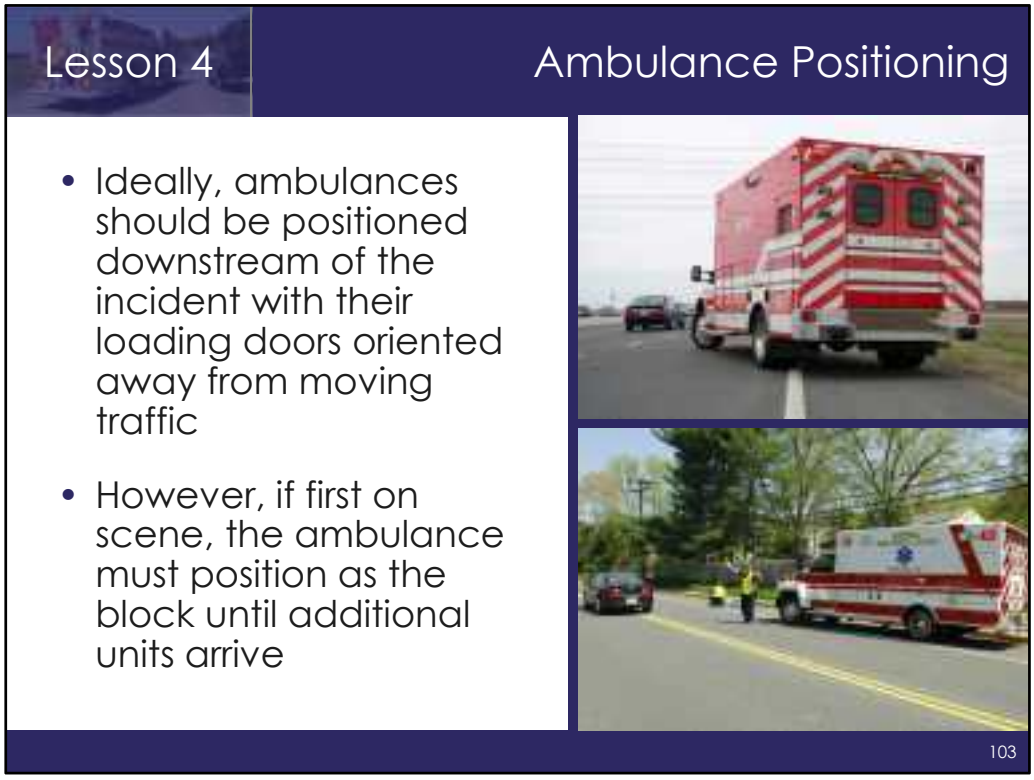
- **Video:** L4-V3_TX_Blocking_Vehicle_Struck-By.wmv

- Video from Mesquite, TX where a motor vehicle crash was being worked by responders
- Fire apparatus was providing a protective block
- Fire crew had just entered their vehicle and were preparing to depart
- Dash cam from the law enforcement vehicle at the scene that was providing advance warning



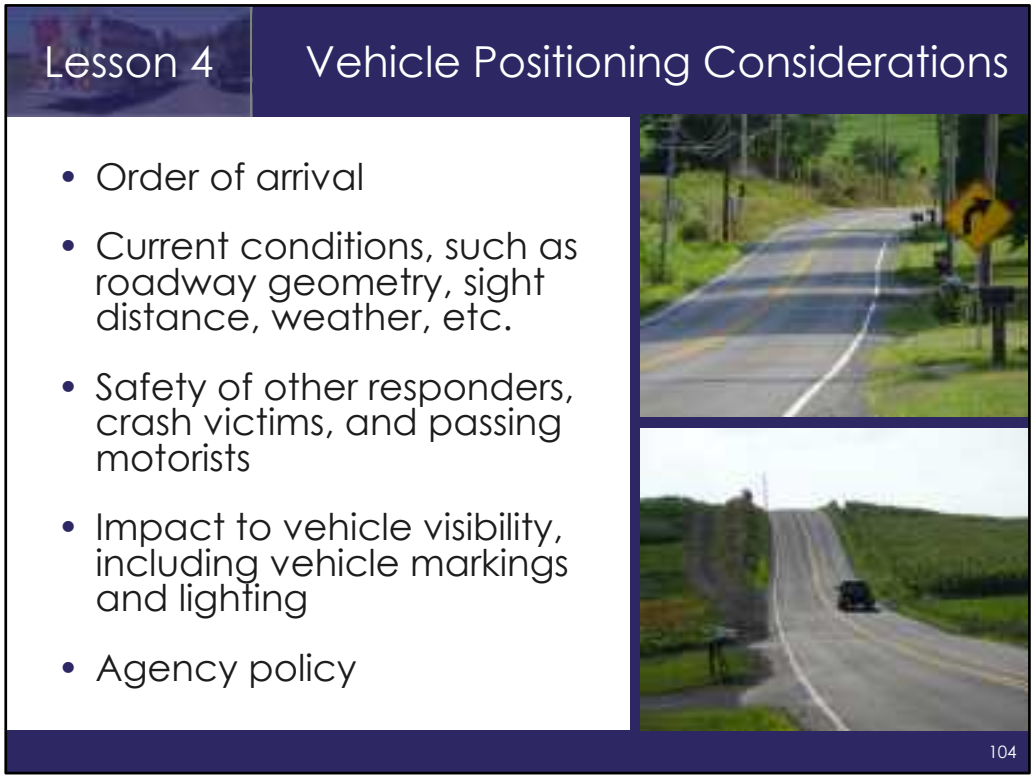
Lesson Objective: 4.2

- This graphic provides the preferred positioning of response vehicles relative to the incident itself
- Similar to Lane +1, vehicle positioning should be reviewed and adjusted as the incident progresses



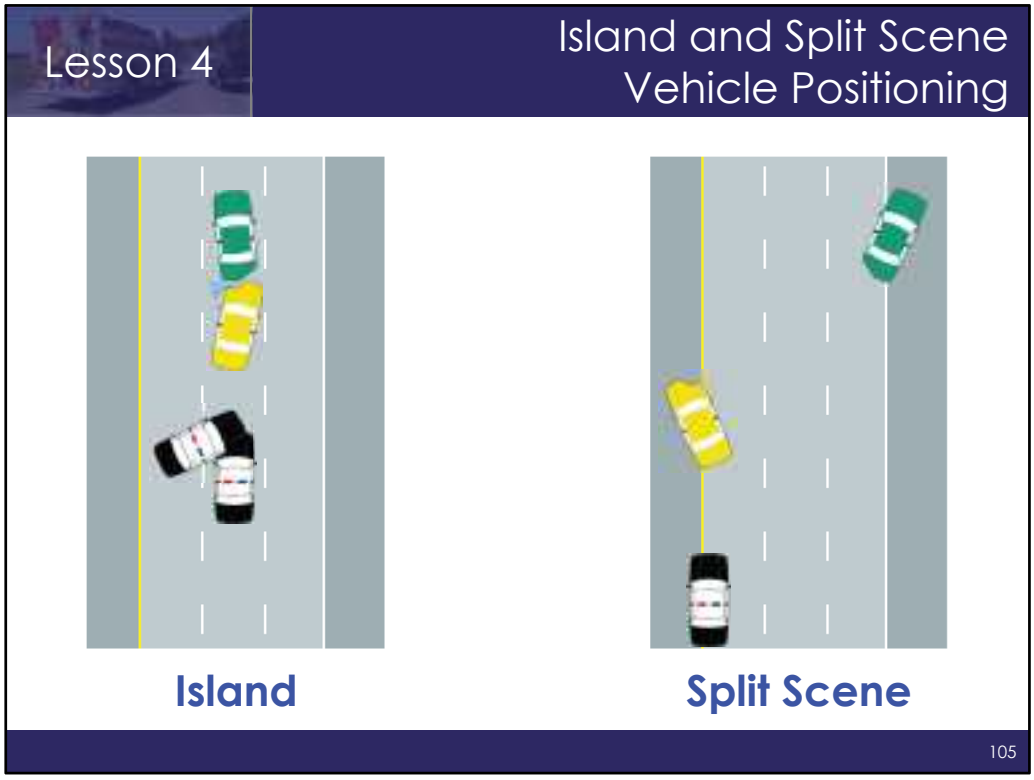
Lesson Objective: 4.2

- If the ambulance arrives on the scene first, it should park in a block position until other emergency vehicles arrive to provide further blocking



Lesson Objective: 4.2

- The order of arrival is obviously not the same for every incident, which makes it difficult to always achieve the preferred vehicle positioning
    - Allowing space for later arriving vehicles and/or willingness to reposition vehicles as needed is important to creating a safe scene
- Agency protocols or policies may also impact vehicle positioning
    - For example, some jurisdictions require two fire apparatus respond to freeway incidents so that one can provide a block while the other works the incident

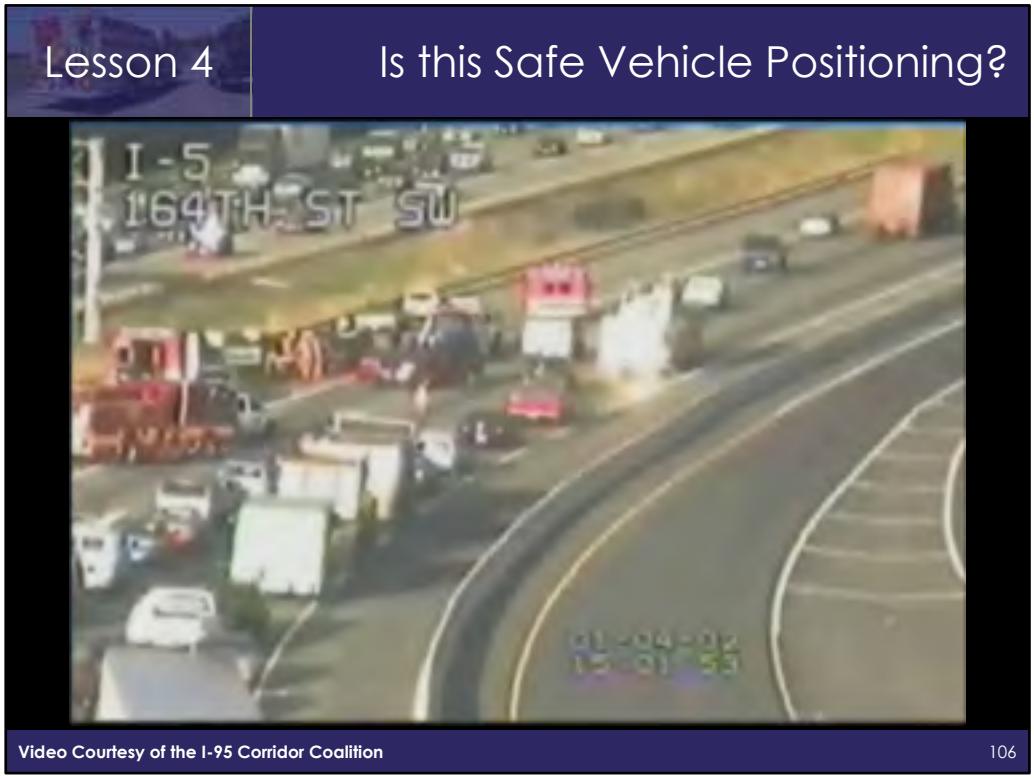


Lesson Objective: 4.2

- **Animation Sequence 1 – Left Side:** Click forward once to have law enforcement vehicle arrive on scene, click again to reposition the law enforcement vehicle to block Lanes 2 and 3, click a final time to show the law enforcement vehicle blocking Lanes 1 and 2

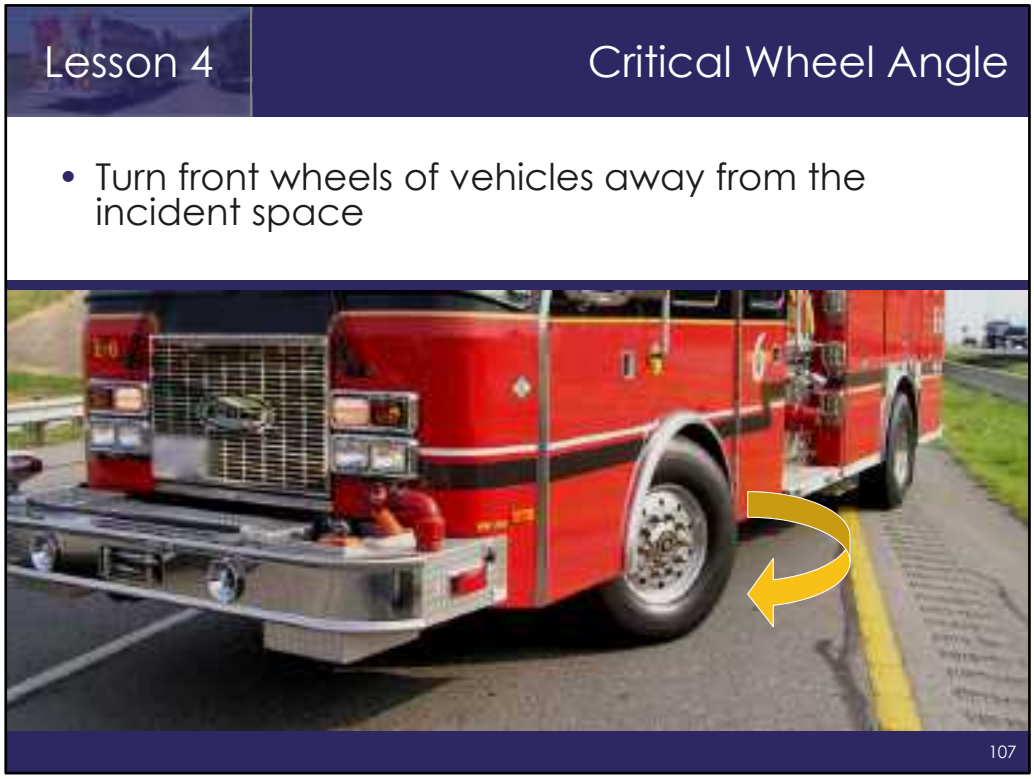
- **Animation Sequence 2 – Right Side:** Click forward once to have law enforcement vehicle arrive on scene blocking the shoulder and Lane 1, click again to reposition the yellow vehicle and law enforcement vehicle to Lane 3 and the shoulder

- When an incident occurs in the middle lane it is referred to as an island **[Click 1]**
- When traffic is passing on both sides of an incident, there are increased dangers for all involved
- It is recommended that additional lanes be blocked in order to direct all passing traffic to one side of the incident **[Click 2]**
- This strategy will provide a Lane +1 situation and consideration should be given to closing the side that responders will most likely need to work in **[Click 3]**
- When involved vehicles are on different sides of the roadway and traffic is moving between those vehicles, it is referred to as a split scene
- A split scene creates divided attention for approaching drivers, and a situation where responders and involved parties may cross from one side to the other in the path of vehicles
- Whenever possible, moving all vehicles to one side of the roadway improves safety **[Clicks 4-5]**
- If vehicles are immobile, responders should stop all traffic temporarily and move all parties to one side, preferably where a responder vehicle is providing a protective block



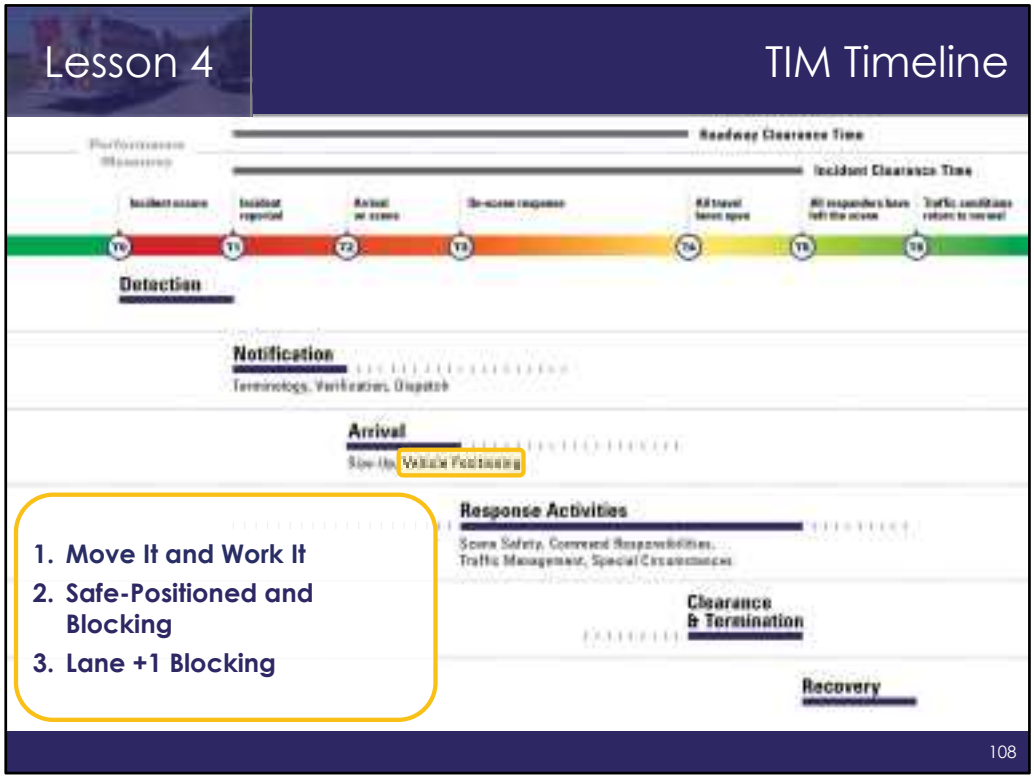
Lesson Objective: 4.2

- **Video:** L4-V4_WA_Split_Scene.wmv
- **Ask/Discuss:** Were the actions taken by responders safe?
- **Ask/Discuss:** What corrective actions could have been taken to improve responder safety in this specific situation?
- Highlight that when arriving on the scene, responders should never artificially create a split scene by positioning vehicles on both sides of the roadway unnecessarily



Lesson Objective: --

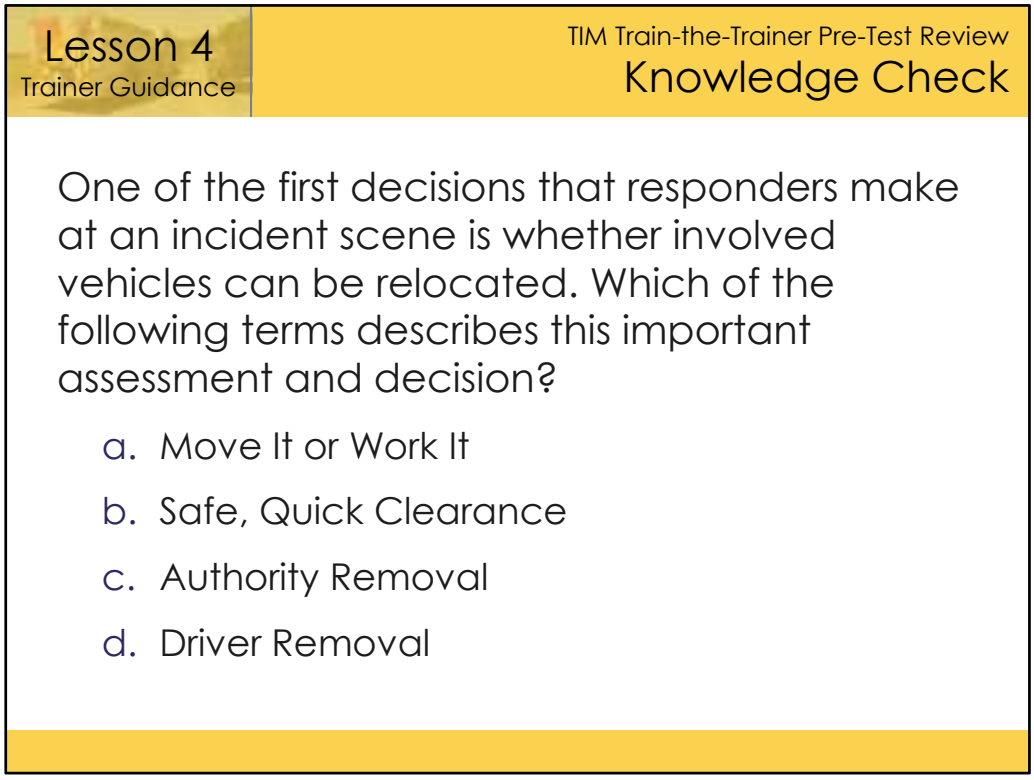
- When positioning a response vehicle, drivers should work on the assumption that the unit may be hit by a vehicle approaching from upstream
- Turning wheels so that they are not facing the incident space is a recommended practice referred to in this course as the critical wheel angle
- The critical wheel angle may help divert a struck responder vehicle away from downstream responders
    - It is understood that the critical wheel angle may not provide any protection when a vehicle is struck by a significantly larger vehicle, or a vehicle traveling at a high rate of speed
    - However, the potential safety benefit of the critical wheel angle makes it a simple good practice to follow
- Agency policy about critical wheel angle should be followed, particularly in the case of law enforcement



TIM Timeline	Lesson Objectives Review

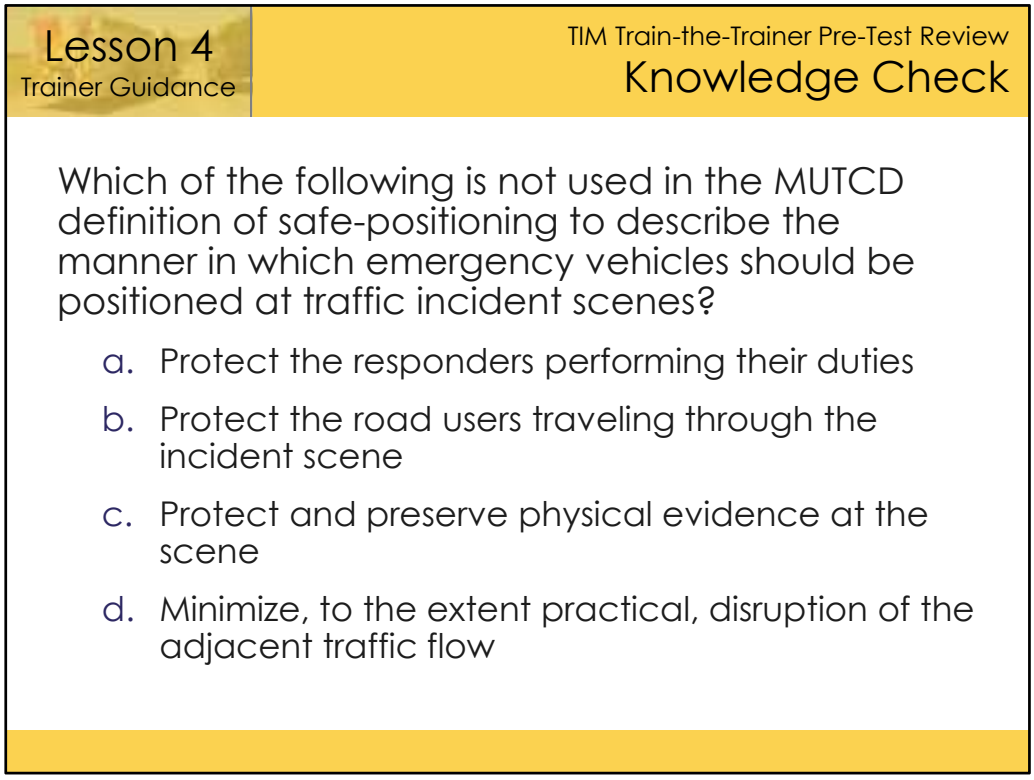
- **Animation:** Click forward to make the small yellow box appear and then click again to bring up the lesson objectives review

- **Ask/Discuss:** How does safe vehicle positioning impact the TIM timeline?
  - Making the correct Move It or Work It decision can significantly reduce incident duration
  - Correct vehicle positioning and the use of Lane +1 when required can actually reduce clearance times



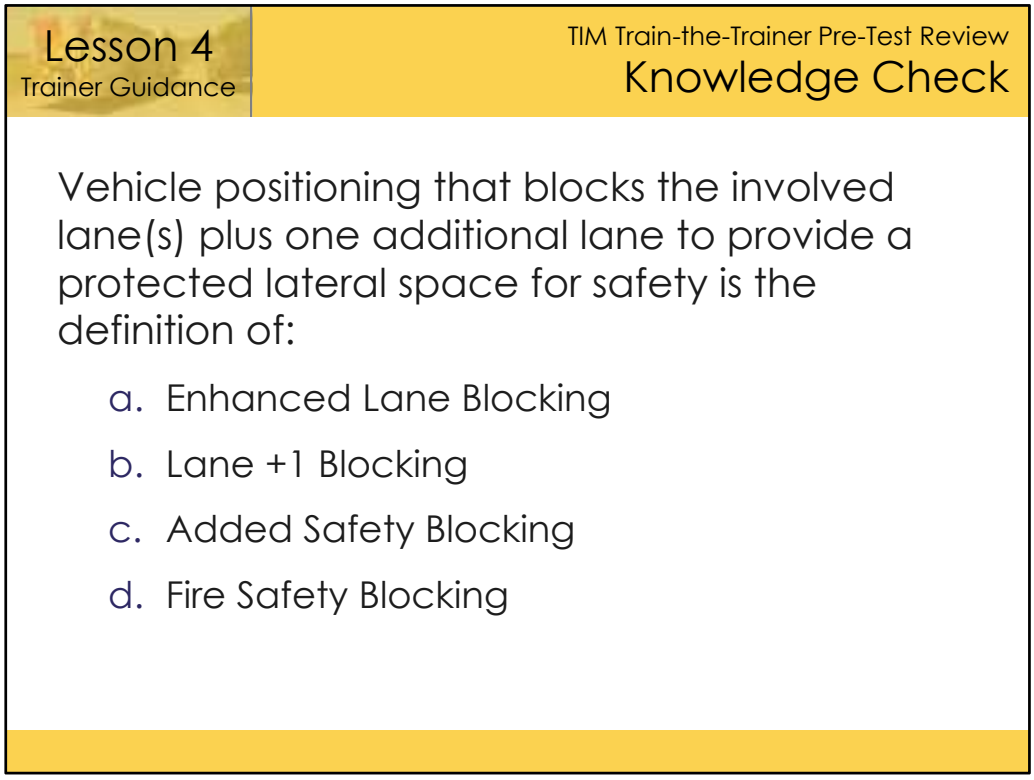
Knowledge Check	Correct Answer: a

- **Answer Reference:** Slide 80



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 85



Knowledge Check	Correct Answer: b

- **Answer Reference:** Slide 97

Lesson 5:
Scene Safety

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Lesson 5 | Lesson Objectives

At the conclusion of this lesson, participants will be able to:

1. Describe how **emergency vehicle markings** can improve scene safety
2. Describe recommendations for **emergency-vehicle lighting** as set forth in the MUTCD
3. Describe **high-visibility safety apparel** requirements for incident responders
4. Describe safe practices for working around or avoiding the **Zero Buffer**

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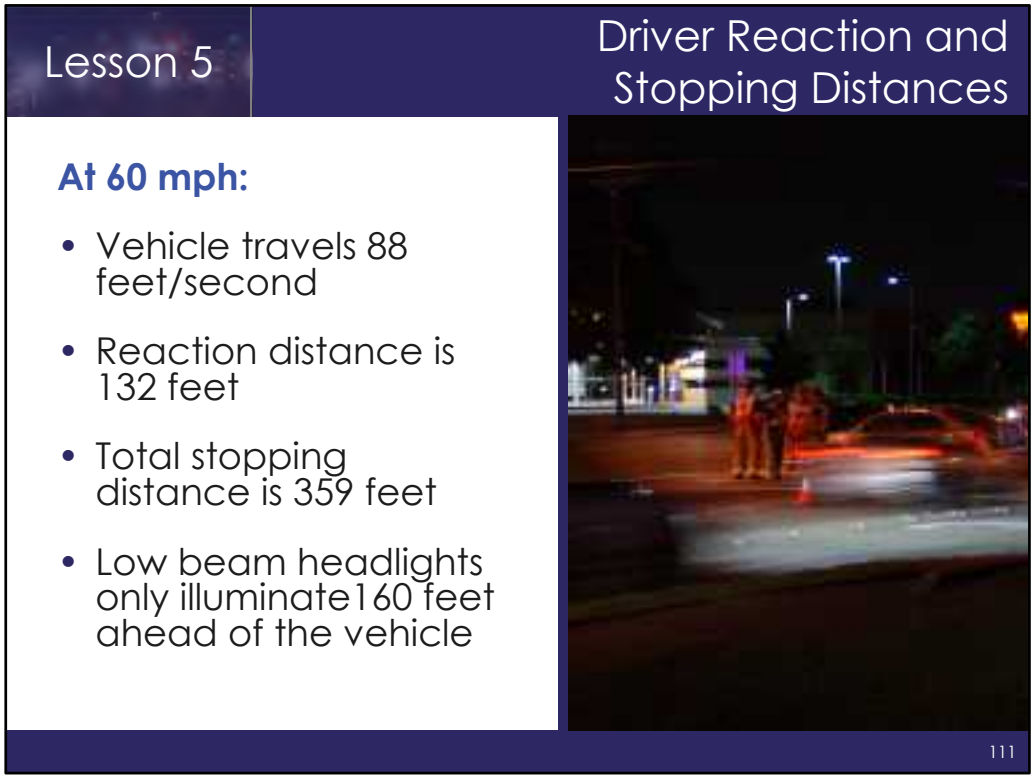

Lesson Objective: --

- Consider total stopping distance as it relates to drivers approaching an incident scene
- At 60 mph, the distance covered in the time to perceive, react, and brake can be around 359 feet
- Typical low beam headlights only illuminate around 160 feet
- The stopping distance of an automobile is goal line-to-goal line, but at night the headlights only shine to the 50-yard line
- This lesson will cover strategies to enhance visibility

Lesson 5 Emergency Vehicle Markings

- **Conspicuity** refers to the ability of a vehicle to draw attention to its presence, even when other road users are not actively looking for it
  - Colors that are:
    - Contrasting
    - Fluorescent
  - Retro-reflective materials

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Lesson Objective: 5.1

- Making responder vehicles more visible improves safety by reducing the chances they will be hit at incident scenes
- The *Emergency Vehicle Visibility and Conspicuity Study* was published in 2009 and is available online
  - Study reports on research done by the Federal Emergency Management Agency (FEMA) and the US Fire Administration (USFA) with support from the U.S. Department of Justice (DOJ) and the National Institute of Justice (NIJ)
- Markings are referred to as passive treatments that complement emergency lighting
- Innovative markings have been used in many European countries (mainly by law enforcement) for years – commonly called the Battenberg pattern
- Markings are now increasingly being adopted by response agencies in the United States
- Contrasting colors make the vehicle stand out
- Fluorescent colors increase daytime visibility
- Retro-reflective materials maximize nighttime visibility

Lesson 5

National Fire Protection Association (NFPA) Standards

NFPA 1901 – Standard for Automotive Fire Apparatus

NFPA 1917 – Standard for Automotive Ambulances

- Rear vertical surfaces of the apparatus shall be equipped with 6 inch retroreflective striping alternating yellow and red in a chevron pattern
- Any door of the apparatus must have retroreflective material affixed to the inside of the door
- A 4 inch retroreflective stripe must be affixed to the cab and body length on each side and the width of the front of the apparatus

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Lesson Objective: 5.1

- **Animation:** Click forward to make picture of vehicle door markings appear

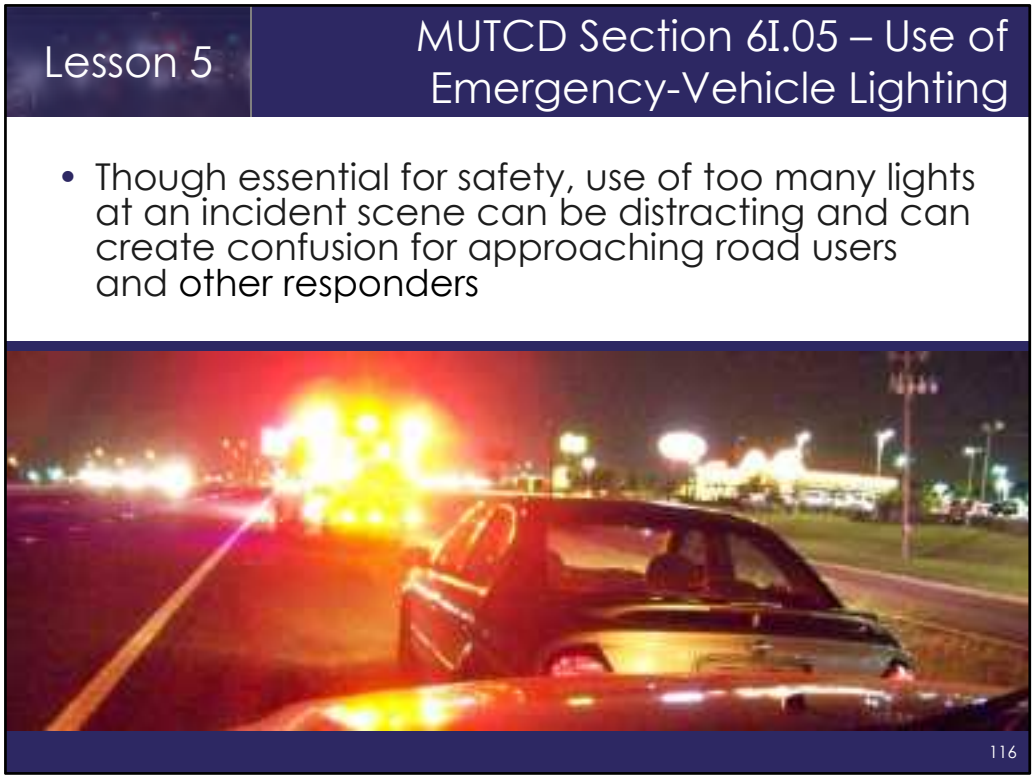
- National Fire Protection Association (NFPA) Standard 1901 governs the application of retro-reflective markings on fire apparatus built after January 2009
- Standard requires 50% of the rear of the fire vehicle have minimum 6 inch striping placed at 45 degree angle down and away from centerline
    - The striping pattern is commonly referred to as chevrons
    - The standard requires use of red, yellow, or hi-visibility green/yellow
- Additional new NFPA Standard 1917, released in 2013, includes similar retro-reflective striping requirements for ambulances
- NFPA standards also require markings on vehicle doors to increase visibility and improve chances that a passing motorist see that the door is open **[Click]**

Lesson Objective: 5.1

- Unlike fire apparatus and ambulances, there is no standard in the United States for other disciplines; law enforcement vehicles, DOT vehicles, Safety Service Patrol vehicles, towing and recovery vehicles, or other responder vehicles
- Increasingly, police departments and other responders are using high-visibility markings on their vehicles voluntarily
- The *Emergency Vehicle Visibility and Conspicuity Study* acknowledged that law enforcement vehicles may have a need for stealth
    - Recommendation for law enforcement is to concentrate markings on the rear of the vehicle
    - Challenge for law enforcement are vehicle contours, large rear glass surface area, and minimal vertical surfaces on the rear of vehicles
- Agency logos and other decals are an important part of the vehicle's overall visibility, particularly at night when they are retro-reflective
    - Retro-reflective agency logos and decals have been noted in national research as an important part of conspicuity
- Agencies and organizations from all responder disciplines should consider marking their responder vehicles
- Using guidance from the NFPA for colors and orientation of markings creates consistency in the responder community and follows the scientific findings of research

Lesson Objective: 5.1

- The top two photos are Scarborough Police Department vehicles
- The bottom left photo is a Scarborough Fire Department vehicle
- The bottom right photo is a Maine State Police vehicle



Lesson Objective: 5.2

- MUTCD Section 6I.05 specifically covers the use of emergency-vehicle lighting and states:
  - The use of emergency-vehicle lighting (such as high-intensity rotating, flashing, oscillating, or strobe lights) is essential, especially in the initial stages of a traffic incident, for the safety of emergency responders and persons involved in the traffic incident, as well as road users approaching the traffic incident
- Emphasize here that more is not always better where emergency lighting is concerned
- Too many lights can be distracting or even worse blinding to approaching motorists
- Lighting technology has advanced significantly in recent decades
- LEDs make more efficient and compact units for public safety applications
- The MUTCD specifically states that emergency-vehicle lighting provides warning only and provides no effective traffic control
  - Most lighting has the effect of "look at me" or "watch out, I am here" rather than guiding approaching drivers
- Vehicle lighting needs to warn drivers but not overload their senses
- Reducing some lights when multiple responders are on scene eliminates a blinding effect
- According to the *Emergency Vehicle Visibility and Conspicuity Study*, there is no research to support the *moth* effect where drivers are drawn into emergency lights

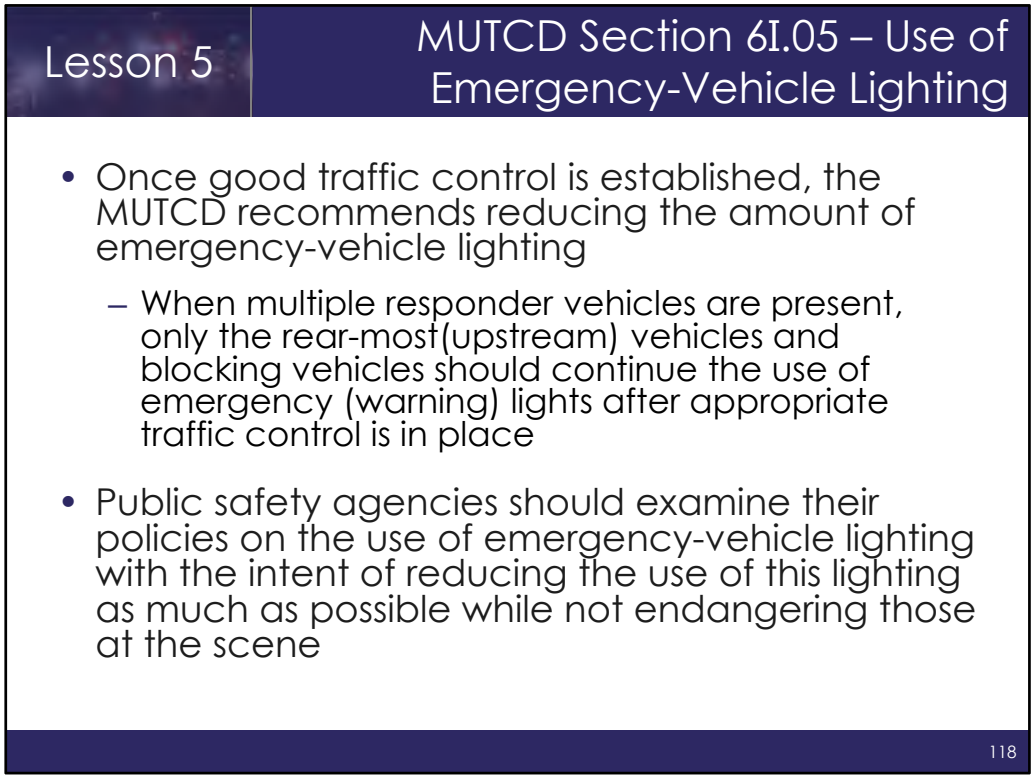
Reference:

- Appendix D.1 – MUTCD Chapter 6I – Control of Traffic Through Traffic Incident Management Areas

Lesson Objective: 5.2

- Reducing forward-facing lights is another important part of TIM
- Forward-facing lights distract traffic traveling in the opposite direction and create rubbernecker delays
- Forward-facing lights can blind opposite direction vehicles
- Forward-facing lights contribute to secondary crashes on opposite direction travel lanes
- Most modern lighting systems allow forward lights to be turned off

- **Ask/Discuss:** Does anyone's agency have any vehicles that are not equipped with the ability to turn off forward-facing lights?



Lesson Objective: 5.2

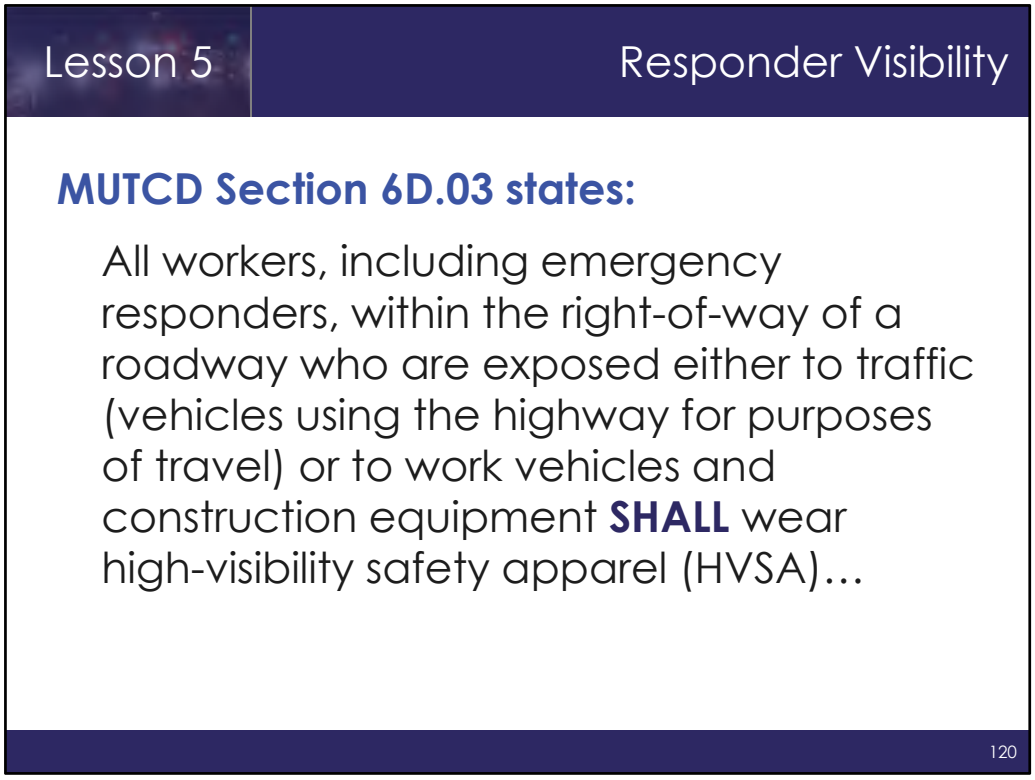
- MUTCD Section 6I.05 (continued):
  - The use of emergency-vehicle lighting can be reduced if good traffic control has been established at a traffic incident scene
- When multiple responder vehicles are present, only the rear-most (upstream) vehicles and blocking vehicles should continue the use of emergency (warning) lights after appropriate traffic control is in place
- Policy guidance might include:
  - Reducing the use of emergency-vehicle lighting as much as possible while not endangering those at the scene
  - Reducing or extinguishing forward facing emergency-vehicle lighting, especially on divided roadways, to reduce distractions to oncoming road users
  - Vehicle headlights, any floodlights or vehicle headlights that are not needed for illumination, or to provide notice to other road users of an incident response vehicle being in an unexpected location, should be turned off at night
- To support the recommendations set forth in the MUTCD, agencies should also consider installing day/night or high/low power switches on LED and strobe bars
  - It is also important that personnel are trained to understand that high is typically needed during the day and that low is intended for nighttime use
- Responders need to be aware of their vehicle's lighting capabilities and should take the time to understand what that lighting looks like to oncoming traffic from all different angles during the day and at night

Lesson Objective: 5.2

- Responders are on the scene of a crash in the southbound lanes of this highway
- Two law enforcement officers have positioned their vehicles with their forward-facing emergency warning lights illuminated
- Highlight the brake lights of the rubbernecker northbound vehicles

- **Ask/Discuss:** What impact, if any, did the law enforcement units' forward-facing lights have on northbound traffic?
    - Highlight that the warning lights are causing a distraction to motorists in the opposing direction of traffic
    - This is especially distracting under low light level situations at night

- **Ask/Discuss:** What practices or protocols exist among participant agencies that apply to this specific situation?

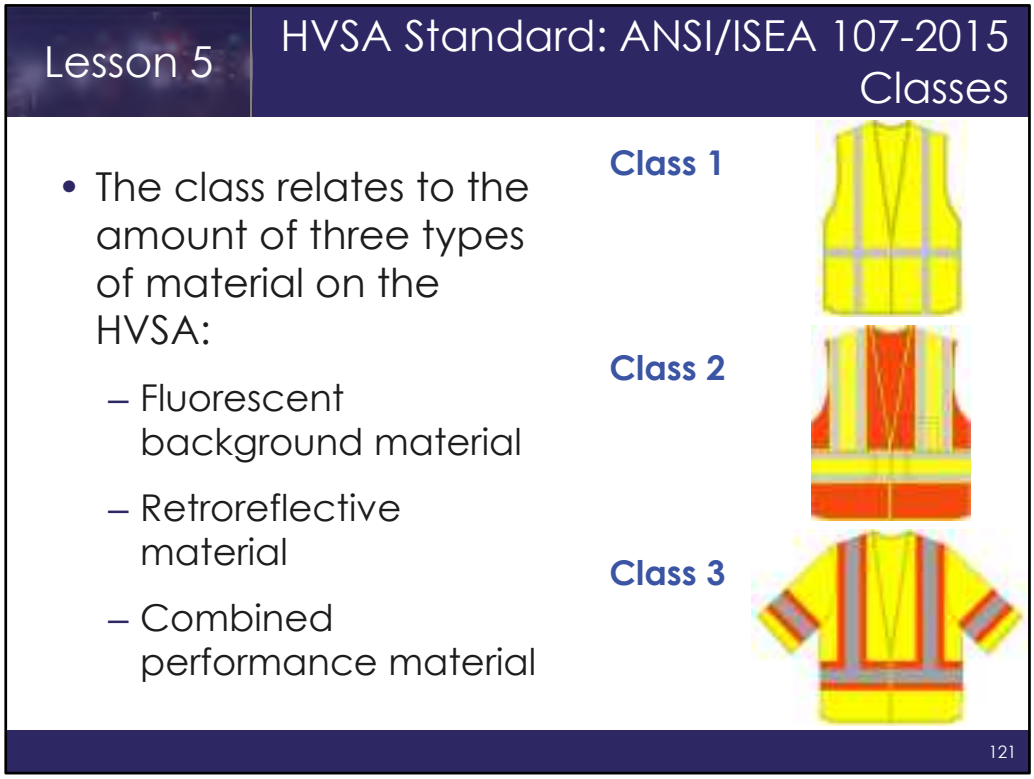


Lesson Objective: 5.3

- As discussed previously, the MUTCD applies to all streets and highways open to public travel
- This requirement applies to all incident responders
- The Code of Federal Regulations (23 CFR Part 634) implemented a high-visibility safety apparel (HVSA) requirement for Federal Aid Highways in November of 2008
- The 2009 MUTCD supersedes 23 CFR and applies the HVSA requirement to all roadways
- Low visibility is a hazard to workers near moving traffic, particularly in a variety of lighting conditions and against complex environmental backgrounds
- HVSA improves worker visibility so that drivers can see them sooner and have more time to avoid an incident
- HVSA are required by law and in most cases agency policy
    - Failure to comply is most importantly a safety concern, but also a violation that might result in legal or administrative sanctions
    - In many jurisdictions, failure to use a safety appliance and/or follow safety policies can result in a loss of benefits should an injury result
- HVSA must be in the passenger compartment (not in the trunk) of the responder vehicle and be readily accessible to responders
- HVSA should be donned prior to exiting the responder vehicle

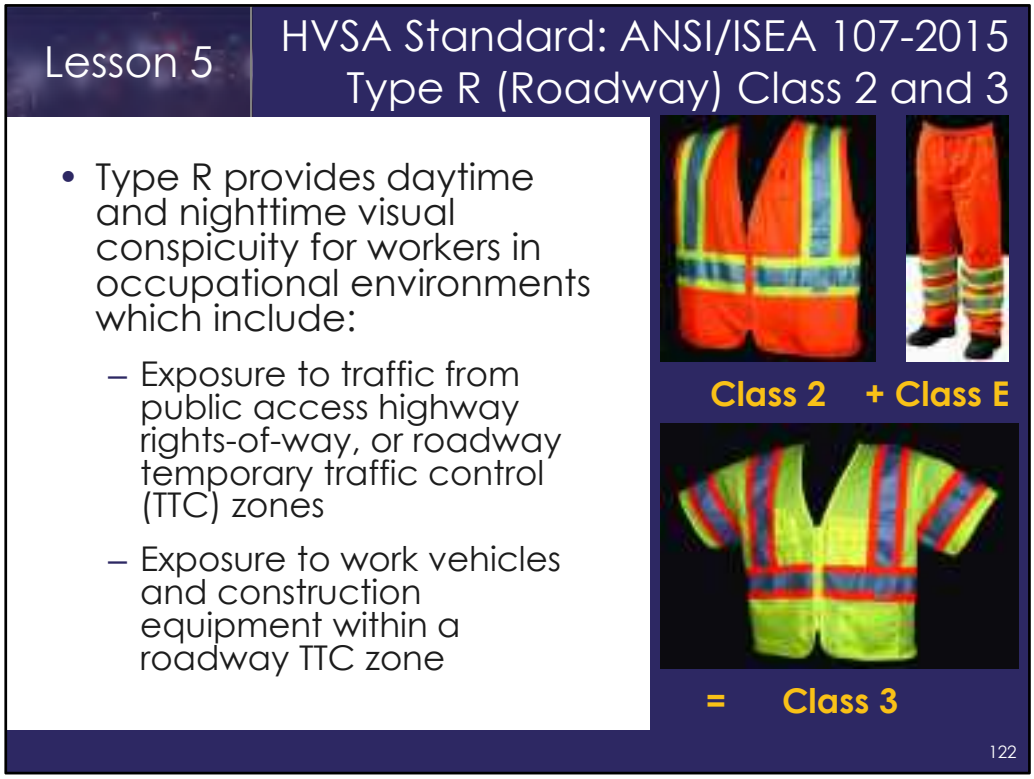
Reference:

- Appendix D.2 – MUTCD Section 6D.03 – Worker Safety Considerations



Lesson Objective: 5.3

- The current HVSA standard is American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) 107-2015
- HVSA consist of a background material that is fluorescent and retroreflective material that is added to that background
- Something called "combined performance material" is also part of the standard, and describes retroreflective parts that are also fluorescent
- HVSA are divided into the following performance classes:
    - Performance Class 1: Minimum visibility for non-complex work environments at less than roadway speeds
    - Performance Class 2: The minimum practice for HVSA in roadway rights-of-way and temporary traffic control as required by the MUTCD
    - Performance Class 3: Greater visibility to wearer in complex backgrounds by the mandatory placement of materials on sleeves and pant legs (if present)
    - Supplemental Class E – Pants, bib overalls, shorts, and gaiters
        - When Class E is worn with Class 2 or 3 the overall classification becomes Class 3
- Classes are defined by the amount of fluorescent and retroreflective material that they contain
    - There are also standards for both the width of the retroreflective material and the size of logos and printing that appear on the HVSA
- The Class 1 vest is a very minimal vest and not one that would be used for TIM
- Class 2 and Class 3 vests will be described further in the slides that follow



Lesson Objective: 5.3

- **Animation:** Click once to make "Class 2" appear on right side, click again to make "Class 3" appear and a final time to make "+ Class E" and "=" appear

- HVSA types are designated based on wearer work settings and activities:
  - "O" – Off-Road: Exposure to moving vehicles/machinery but not on public rights-of-way
    - Not acceptable for TIM responders
  - "R" – Roadway: Exposure to traffic on public access highways and in temporary traffic control (TTC) zones where construction equipment operates
  - "P" – Public Safety: Incident responders and law enforcement personnel exposure to moving traffic and in TTC
- Pictured are examples of the Type R, Class 2 and 3 HVSA **[Clicks 1-2]**
- Class 3 has material on the sleeves to achieve the amount of background material required
- Note that the new standard includes an accommodation for the Class 2, Type R vest to use 540 inches square to fit smaller workers
- When a supplemental Class E item is worn with Performance Class 2 or 3, the overall classification for the ensemble is Class 3 **[Click 3]**

Lesson 5 — HVSA Standard: ANSI/ISEA 107-2015 Type P (Public Safety) Class 2 and 3

- Type P HVSA is for:
  - Emergency responders
  - Incident responders
  - Law enforcement personnel
- Provides additional options for responders who have competing hazards or require access to special equipment
- A five-point breakaway function is available as an additional safety feature

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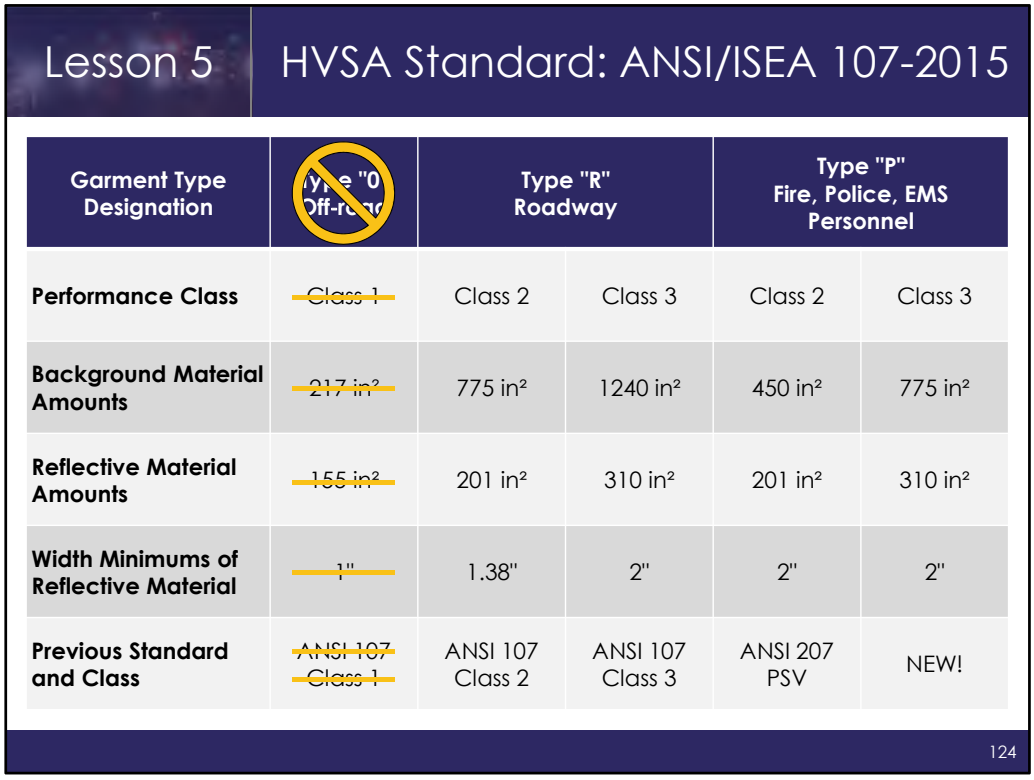
Lesson Objective: 5.3

- Pictured is an example of the Type P, Class 2 vest
- Highlight that the length of the vest is shortened for competing hazards or access to special equipment
- Similar to Type R, when a supplemental Class E item is worn with Performance Class 2 or 3, the overall classification for the ensemble is Class 3



Lesson Objective: 5.3

- **Animation:** Click forward to cross out Type O

- The ANSI/ISEA 107-2015 standard consolidates previous versions that used 107 and 207 designations
- Reiterate that Class 1 and Type O are not acceptable for use by responders **[Click]**
- Highlight that most current HVSA in use meets the previous standard, and the comparable standard and class are listed on the bottom row of the table

Lesson 5
Trainer Guidance

Demonstration
HVSA – Vest

- It is recommended that the trainer bring an ANSI compliant piece of HVSA to class as a prop
  - Ideally, the trainer should don a vest and demonstrate the 5-point breakaway if possible
- Consider asking class participants to bring in their HVSA during a class break if it is in their vehicle
- Trainers should teach to the new standard (Class 2/3 Type R/P), but recognize that the old 107 or 207, Class II or Class III, designation is still compliant with MUTCD requirements

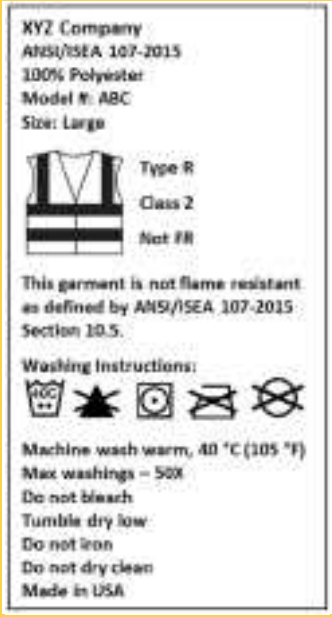
Lesson Objective: 5.3

Lesson 5
Trainer Guidance

Supplemental Information

Understanding HVSA Labeling

- All HVSA are required to be marked with the following:
  - Manufacturer ID
  - Product type
  - Size
  - ANSI Standard Number
  - Flame resistance
  - Max number of washings
  - Pictogram with type, class, and flame resistance status



Lesson Objective: 5.3

- Pictured is a sample compliant HVSA label
- The new standard includes the flame resistance (FR) label, which is required to indicate FR and the designation of the specific ASTM standard for flame resistance or a separate label with NFPA 1977 or 2112 certification
- Instructions for use are required to be provided with every HVSA garment
  - Must be printed in at least English
  - Fitting – how to put on and take off
  - Necessary warnings of misuse
  - Limitations on use
  - Storage
  - Maintenance
  - Number of cleanings without impairment
- Trainers should use a sample vest to highlight HVSA labeling for the class

Lesson 5
Trainer Guidance

Supplemental Information
MUTCD Compliance

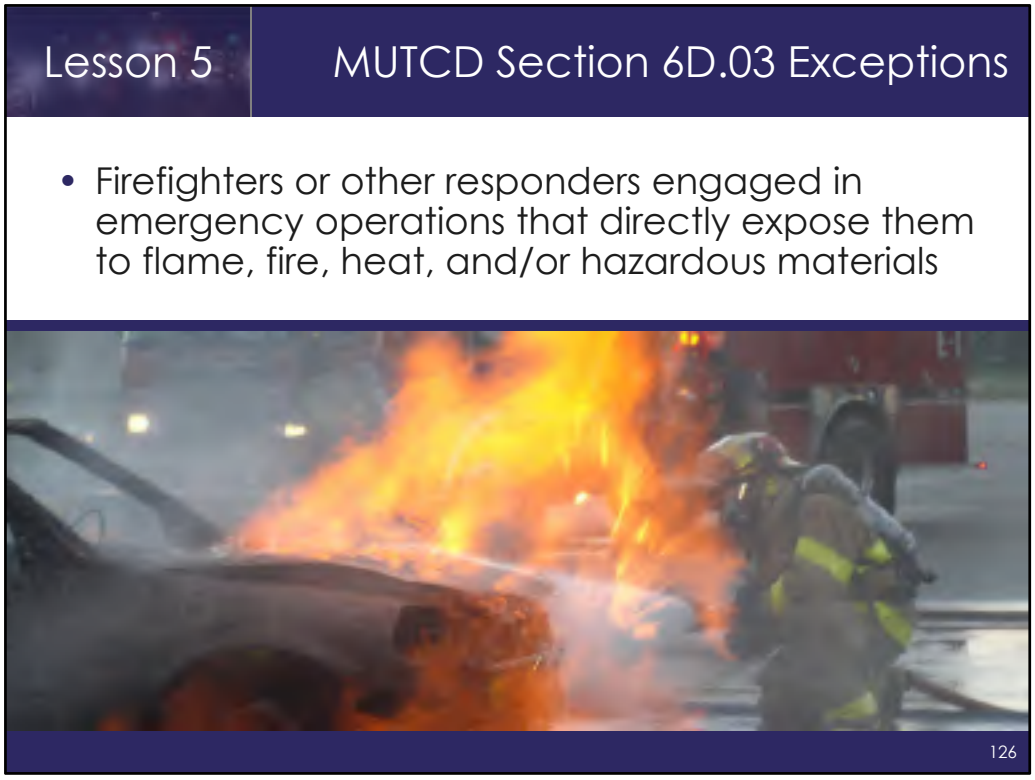
- MUTCD Section 6D.03 requires use of:
  - ANSI/ISEA 107–2004 Performance Class 2 or 3
  - ANSI/ISEA 207-2006
  - Equivalent revisions
- FHWA has issued formal letters of acceptance for more recent revisions to the standard, including:
  - ANSI/ISEA 107-2010
  - ANSI/ISEA 207-2011
  - ANSI/ISEA 107-2015

Lesson Objective: 5.3

- HVSA use is required by the MUTCD
- The 2009 version of the MUTCD references ANSI/ISEA Standards 107-2004 and 207-2006, or equivalent revisions
- All revisions to the ANSI 107 and 207 standards have been deemed "equivalent revisions" by the FHWA, meaning they meet the MUTCD 2009 requirements
  - The memo accepting the ANSI/ISEA 107-2015 standard is pictured

Lesson Objective: 5.3

- **Animation:** First click reveals left text box and second click reveals right text box
- MUTCD Section 6D.03 specifically address use of HVSA by law enforcement and dictates the type of activities that require HVSA use
  - This includes directing traffic, investigating crashes, and handling roadway closures **[Click 1]**
- The MUTCD does not require the use of HVSA for law enforcement activities such as traffic stops **[Click 2]**

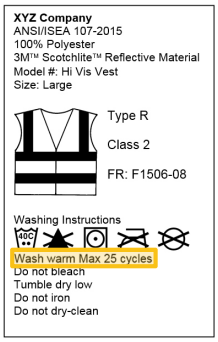


Lesson Objective: 5.3

- Responders are exempt from MUTCD HVSA requirements when they are engaged in any activity that directly exposes them to flame, fire, heat, and/or hazardous materials
- Other firefighters on the scene, such as the pump operator and the supervising officer, are required to comply with the requirement if not directly exposed to fire, etc.

Lesson 5 — End of Service Life

- According to FHWA and the American Traffic Safety Services Association (ATSSA), HVSA should be replaced when it becomes:
  - Not visible at 1,000 feet day or night
  - Faded
  - Soiled
  - Torn
  - Worn
  - Dirty
  - Defaced
- The label identifies the max number of wash cycles



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Lesson Objective: 5.3

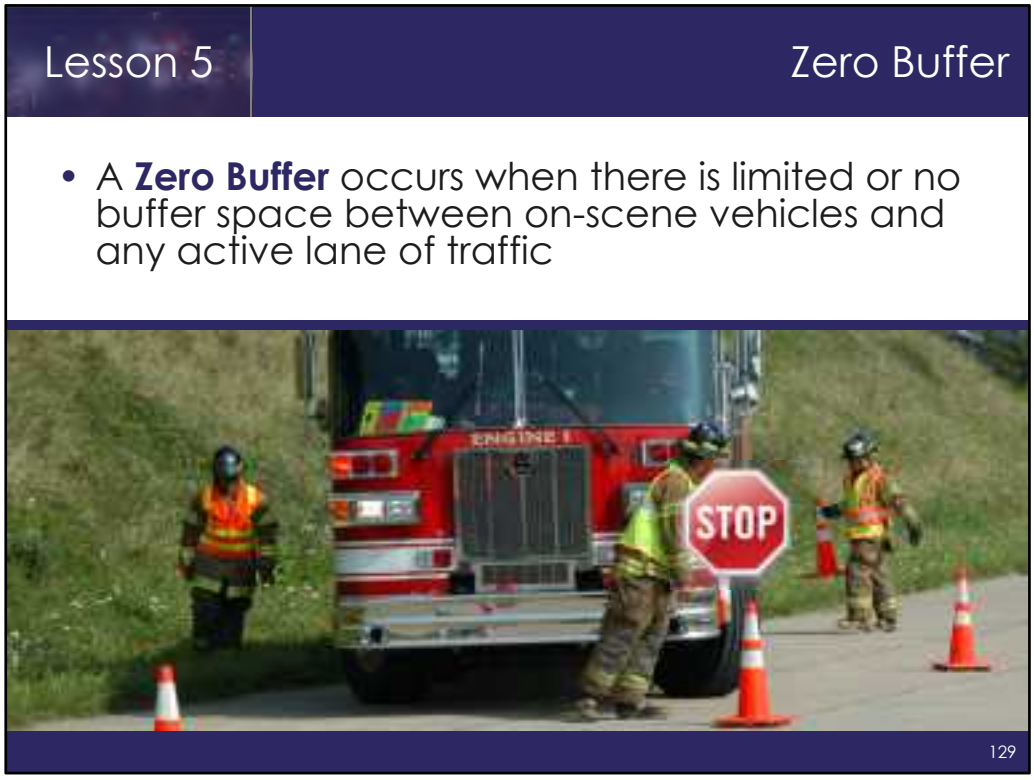
- The typical vest useful life depends on the type of work an individual performs while wearing the vest
  - The useful life of garments that are worn on a daily basis is approximately six months
  - Garments that are not worn on a daily basis are expected to have a useful service life of up to three years
  - Actual lifetimes in the field will vary depending on exposure and care conditions, and could range from weeks to years
- Vests, when worn, must be visible up to 1000 feet day or night to be compliant with the ANSI/ISEA standard

Reference:

- Appendix E – American Traffic Safety Services Association High-Visibility Safety Apparel Brochure

Lesson Objective: 5.4

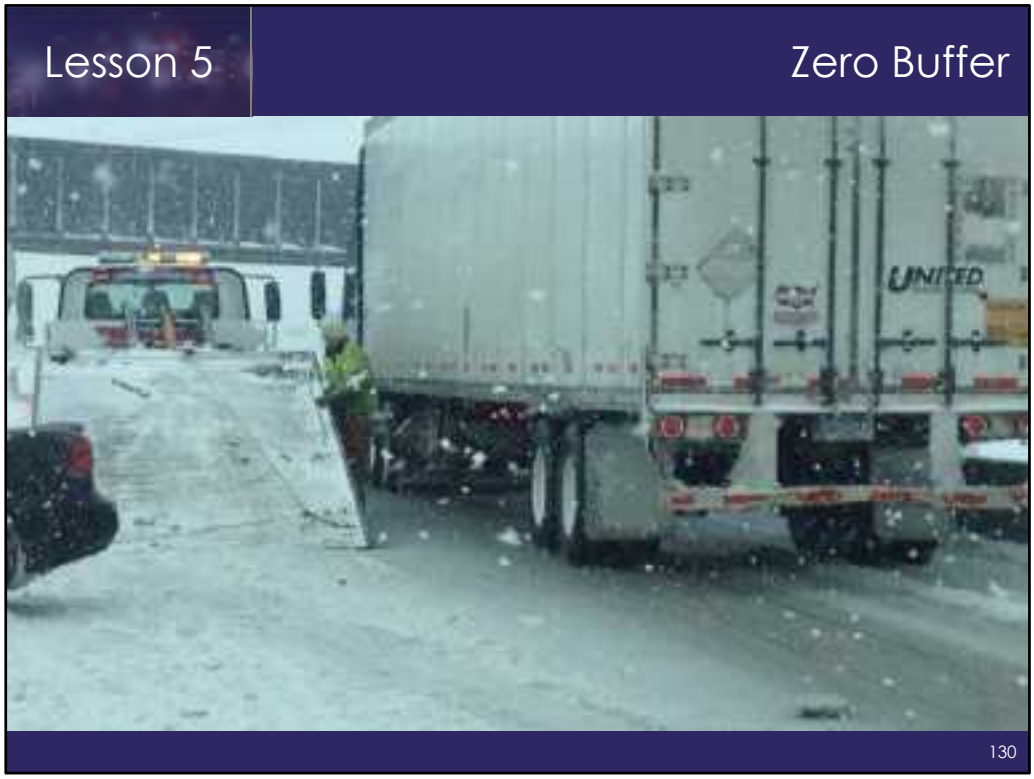
- Note that many responders are struck while exiting their responder vehicle, though few training programs for disciplines include instructions
- If always practiced, these steps become second nature
- Passengers, specifically fire personnel, should exit on the non-traffic side of the responder vehicle



Lesson Objective: 5.4

- **Animation:** Click forward to make STOP sign appear

- Anytime a responder is on the traffic side of any vehicle at an incident scene, they are in danger
- The term Zero Buffer is not an official MUTCD term, but a common term that describes the fact that there is no room for error
- Responders should avoid the Zero Buffer
- Responders who are required to enter a Zero Buffer should do so with great caution and immediately seek a safer place away from moving traffic **[Click]**



Lesson Objective: 5.4

- Working in the Zero Buffer is very dangerous

- **Ask/Discuss:** What can be learned from this situation?
  - Any person at an incident scene who sees someone in an unsafe situation should assist to get them back to safety
  - The tow operator may be concerned about the safety implications of being on the left side of the tow truck because of the manner the cable is being used
  - A police officer or other responder observing this issue might initiate a Lane +1 block or momentarily stop traffic to provide a safe location for the tower to work
  - Speaking about the unsafe situation after the fact (possibly during an after-action review) might prevent this from happening again

Lesson Objective: 5.4

- **Video:** L5-V1_TN_Zero_Buffer_Struck-By.wmv

- A Tennessee Highway Patrol trooper was required to move his seat organizer from the front to the rear to accommodate a passenger
- At a crash scene, it was necessary to obtain forms requiring he place himself in the Zero Buffer

- **Ask/Discuss:** Debrief the video

Lesson Objective: 5.4

- **Video:** L5-V2_FL_Zero_Buffer_Struck-By.wmv

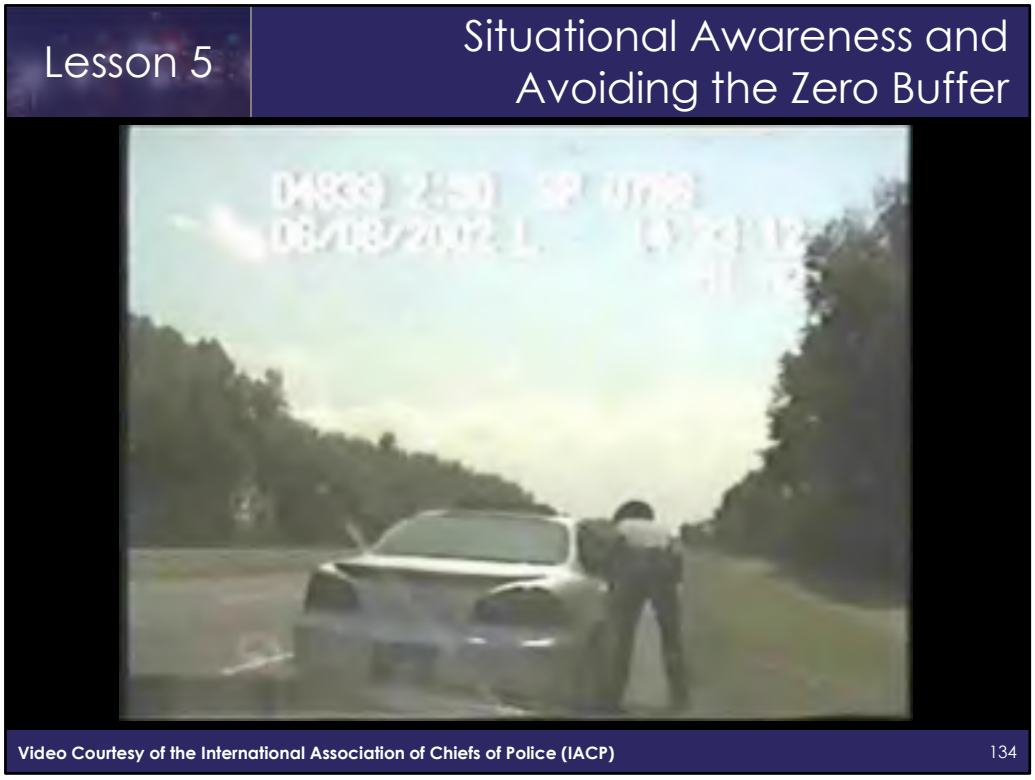
- A Florida Highway Patrol trooper is conducting a traffic stop, executing a driver's side approach
- The agency has advocated and trained the non-traffic side approach since the 1980's, but it is at the discretion of the individual officer
- The driver of the passing vehicle was running late for the airport and panicked when he saw traffic ahead slowing

- **Ask/Discuss:** Debrief the video
    - Note the distance from the edge line

Lesson Objective: 5.4

- **Ask/Discuss:** What is your local law enforcement agency's policy for making vehicle contact?
  - The use of a passenger side, non-traffic side, approach during a traffic stop reduces the officer's exposure to the hazard of being in the Zero Buffer
  - A subcommittee of the International Association of Chiefs of Police (IACP) found that nationally, differences exist in vehicle positioning, approach side, and critical wheel angle among law enforcement agencies
  - Agency policy and the threat of the encounter should dictate all traffic stop protocols for law enforcement personnel

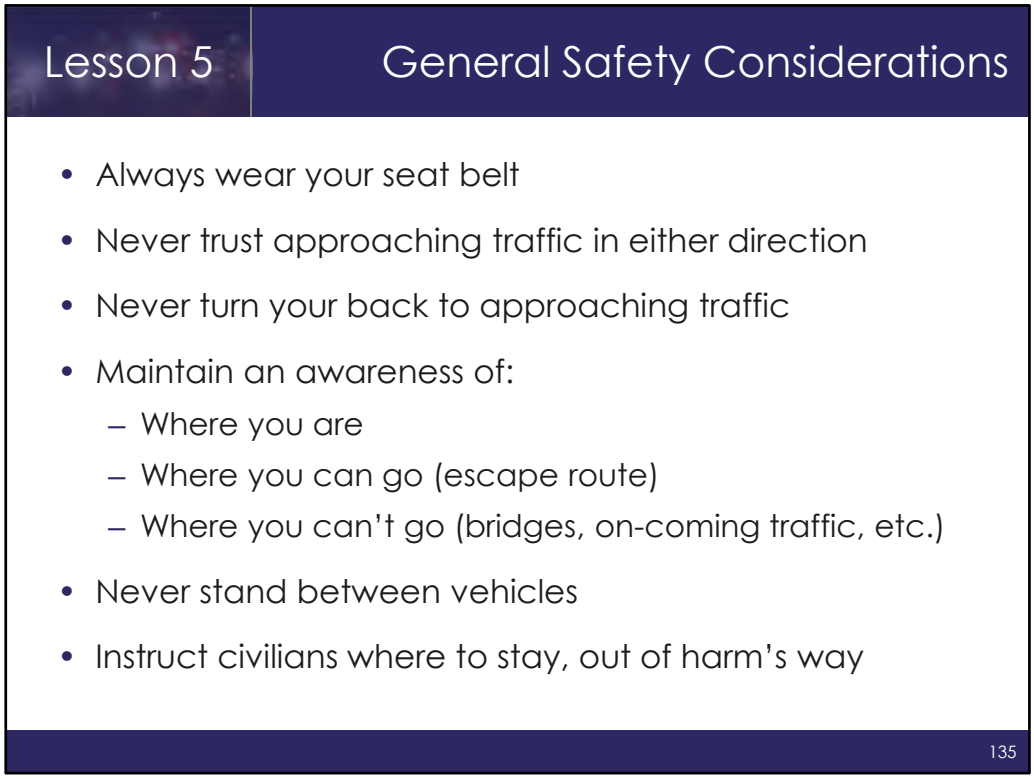
- Note that using a non-traffic side approach is also a best practice for Safety Service Patrol operators



Lesson Objective: 5.4

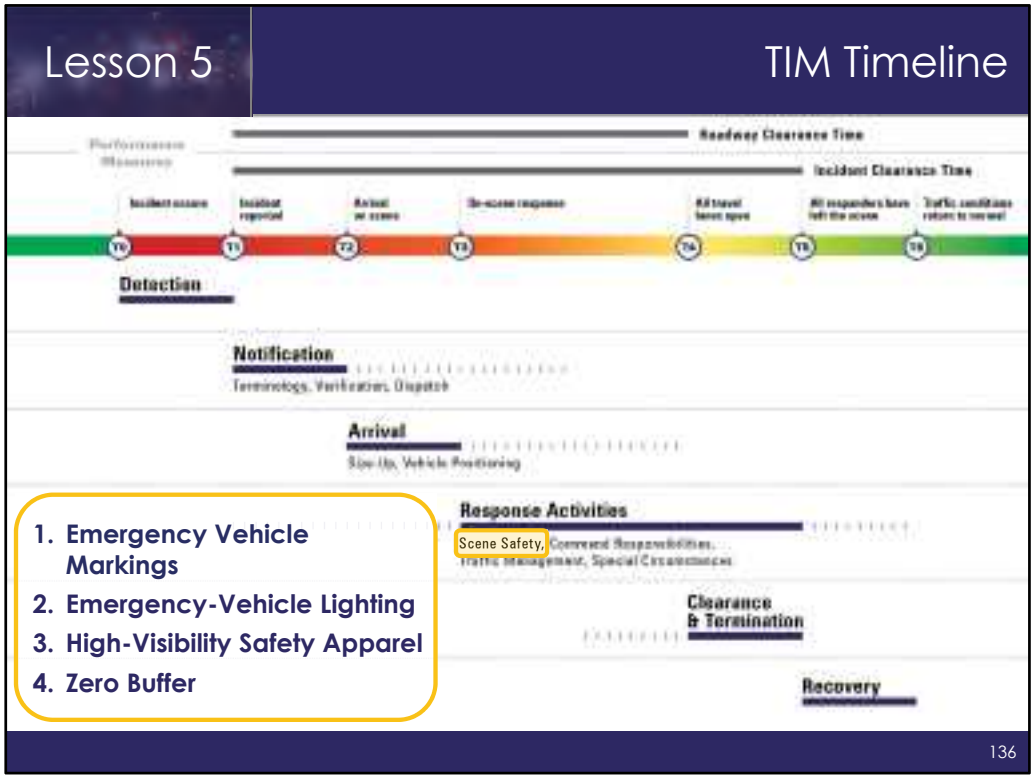
- **Video:** L5-V3_Avoiding_Zero_Buffer.wmv

- **Ask/Discuss:** Debrief the video
    - Highlight the Trooper's situational awareness and the need to have an escape route



Lesson Objective: --

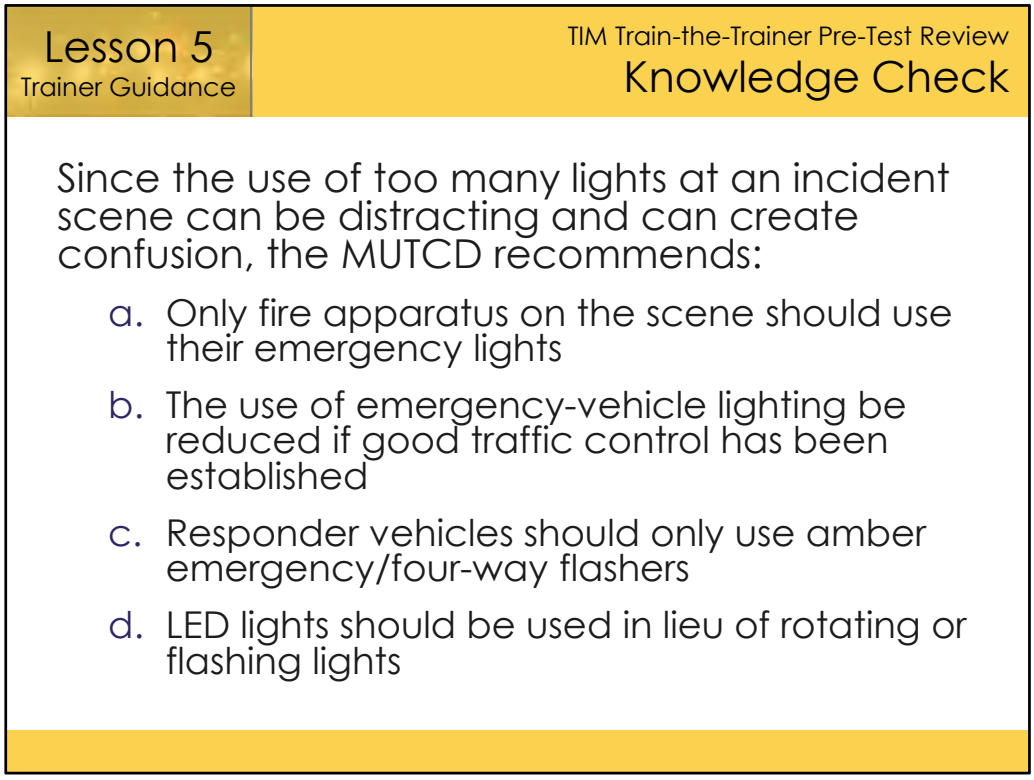
- Review these basic, but important, safety tips
- Remember, don't allow yourself to get tunnel vision, maintain a view of the "big picture"



TIM Timeline | Lesson Objectives Review

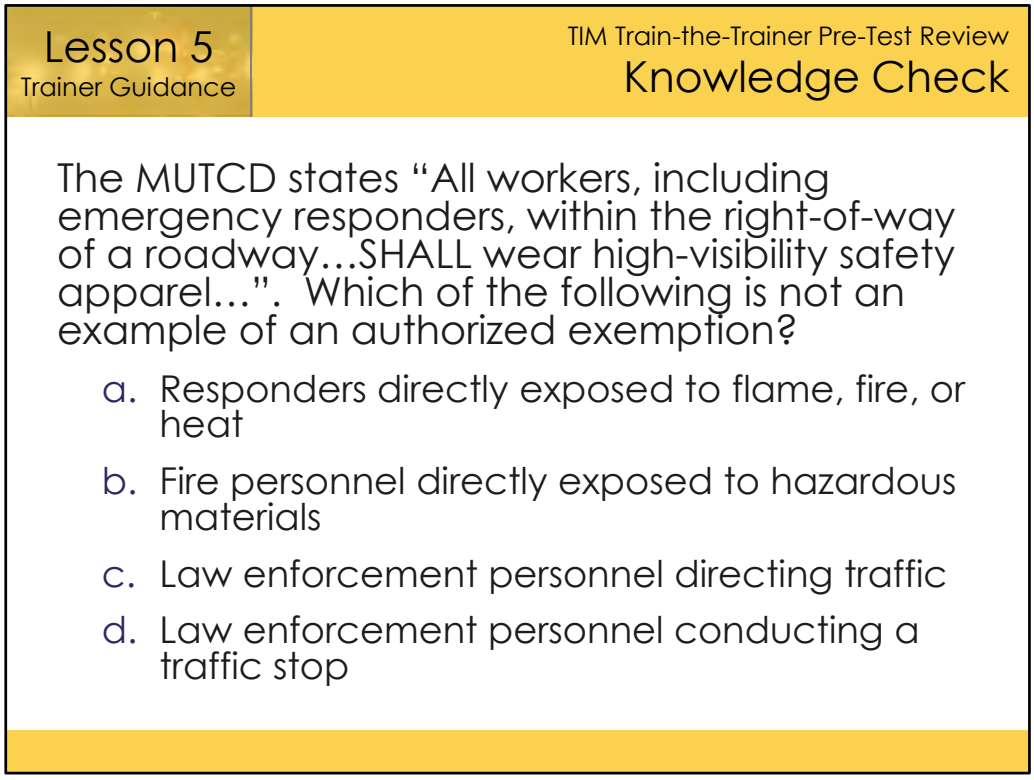
- **Animation:** Click forward to make the small yellow box appear and then click again to bring up the lesson objectives review

- **Ask/Discuss:** How do emergency vehicle markings and emergency-vehicle lighting impact the TIM timeline?
    - Highlight that scene safety is a critical and required component of effective TIM



Knowledge Check	Correct Answer: b

- **Answer Reference:** Slide 118



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 125

Lesson 6: Command Responsibilities

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Lesson 6 — Lesson Objectives

At the conclusion of this lesson, participants will be able to:

1. Describe both the need and the requirements for establishing and participating in the **Incident Command System (ICS)**
2. Describe when it is appropriate to implement **Unified Command**
3. Identify the need for and use of **Staging Areas**

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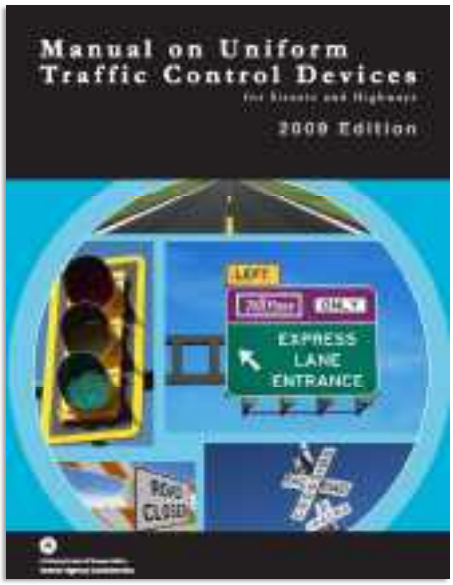
Lesson 6 — Incident Command System (ICS) and MUTCD Chapter 6I

- MUTCD Section 6I.01 states:

  The National Incident Management System (NIMS) requires the use of ICS at traffic incident management scenes

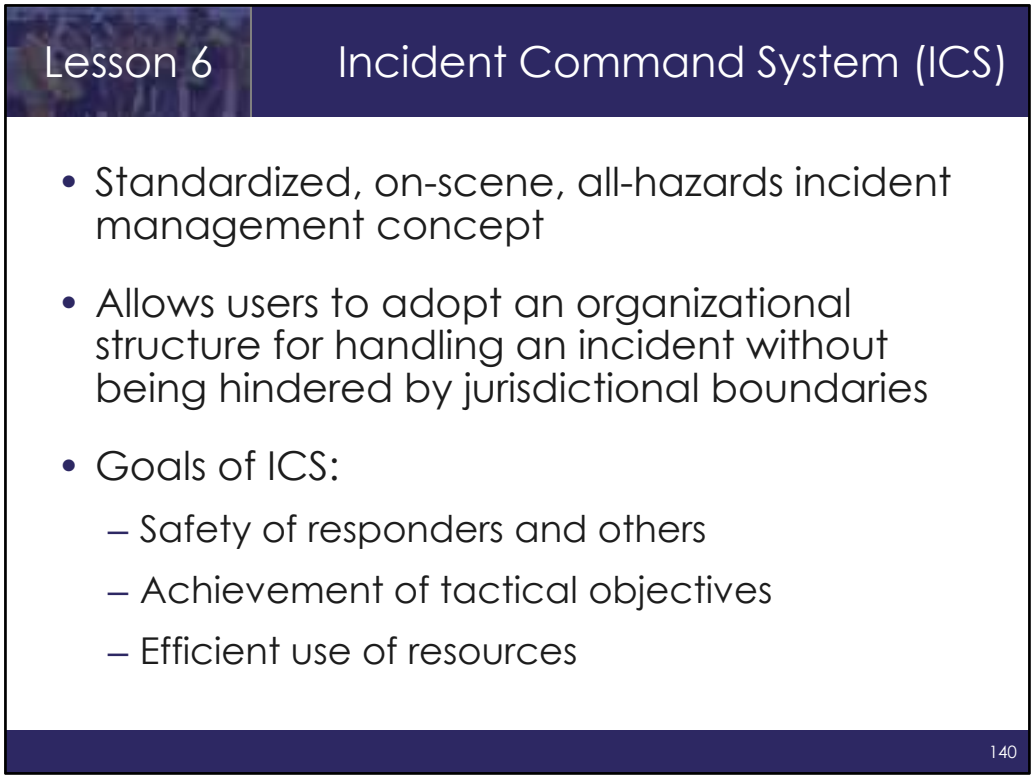
- State and local laws and inter-agency agreements may further guide the use of ICS



139

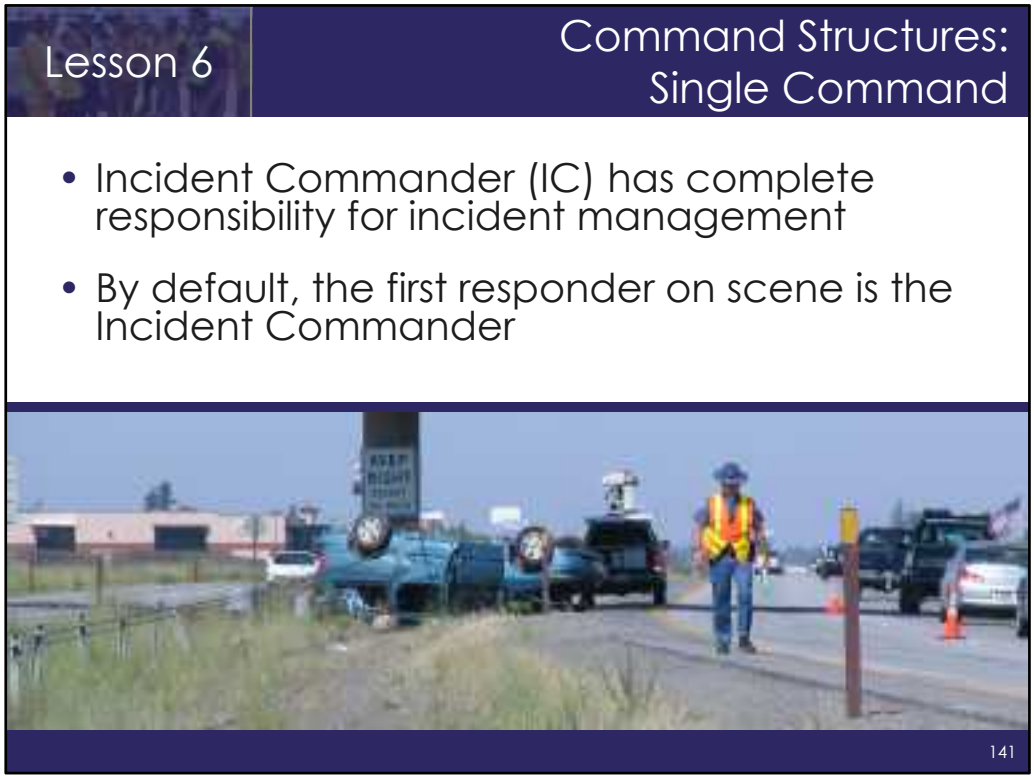
Lesson Objective: 6.1

- The NIMS requirement that ICS be used at traffic incident scenes is emphasized in MUTCD Section 6I.01
- Some states have laws that prescribe who is in charge at roadway incidents, while in other states there may be memorandum of understanding (MOU), joint operating procedures/policies, or other agreements that define responsibilities
- The National TIM Responder training course assumes that participants have already taken ICS 100, 200, and IS 700
- The material in Lesson 6 is intended to simply be a review of the fundamental ICS information presented in these three online courses in the context of traffic incidents
- For those who have not completed these courses, they are available online at no charge and are strongly recommended for all responders
  - https://training.fema.gov/nims/



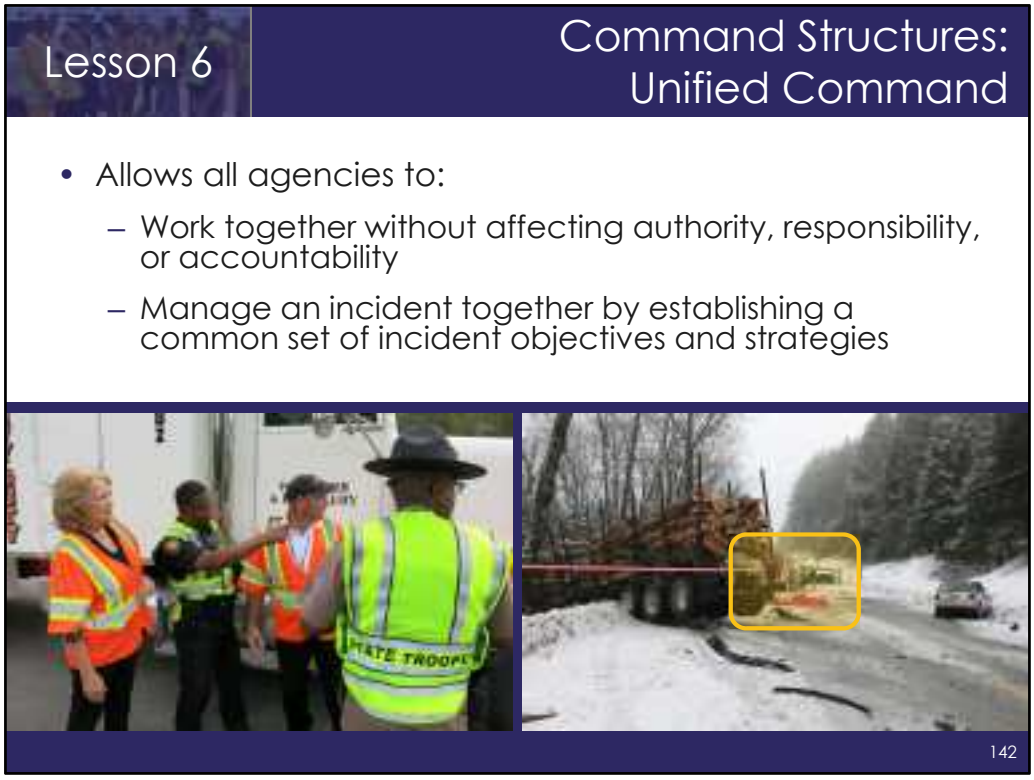
Lesson Objective: 6.1

- Clearing incidents safely and quickly depends on developing coordinated, multi-agency operations that are supported by integrated communications
- Coordination comes when all responders from all disciplines are trained and can effectively operate under the ICS at highway incidents
- Like the NASCAR pit crew analogy, everyone works together under a coordinated system, knowing their role plus understanding the roles of their team members



Lesson Objective: 6.1

- When one individual is designated as Incident Commander, or the IC, that person represents the Single Command concept
- Single Command is typically employed at smaller scale incidents



Lesson Objective: 6.2

- Unified Command is a joint management and authority structure in which the role of Command is shared by two or more individuals
  - Unified Command typically is fulfilled by a team of individuals already having authority within their discipline or responding agency
  - Allows responding agencies and/or jurisdictions with responsibility for the incident to share incident management
  - May be needed, and is most appropriate for, major incidents involving multiple agencies

Lesson Objective: 6.3

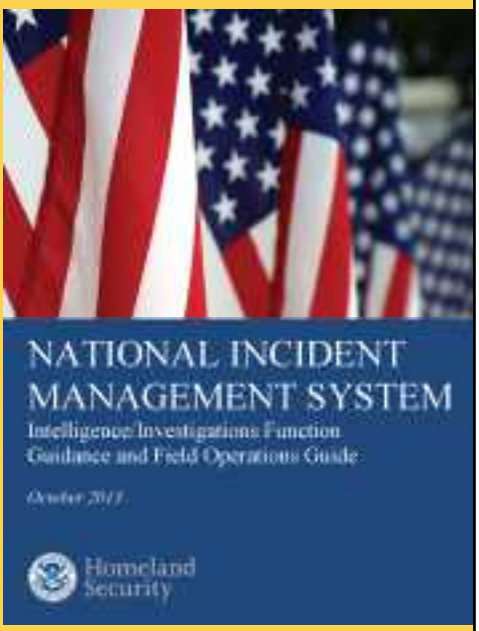
- Physical organization of a scene involves the establishment of a Traffic Incident Management Area, which is a type of Temporary Traffic Control Zone defined in Chapter 6 of the MUTCD
- Larger-scale traffic incidents may also require an Incident Command Post, staging area(s), and/or detour routes
- The Incident Command Post is where the Incident Commander or those participating in a Unified Command operation are physically located at the incident scene
    - An Incident Command Post should be established when ICS is initiated
    - Initially, it can be inside a responder's radio-equipped vehicle
    - The Incident Command Post location should be communicated to responders as needed and clearly marked if possible
    - The Incident Commander/Unified Command team should be located at the Incident Command Post
- Staging areas allow for the organization of personnel and equipment to be readied for immediate use at the incident scene
    - Holding incoming resources that are not actively involved in incident operations
    - Consideration should be given to the location and whether there is enough room for large response vehicles to easily enter or exit the staging area
    - Off-site staging areas are preferred, but the area downstream of an incident scene can also be used
- Staging areas also allow for resources and/or personnel that are ready, but ultimately not needed, to immediately depart the scene and return to service

Lesson 6
Trainer Guidance

Supplemental Information

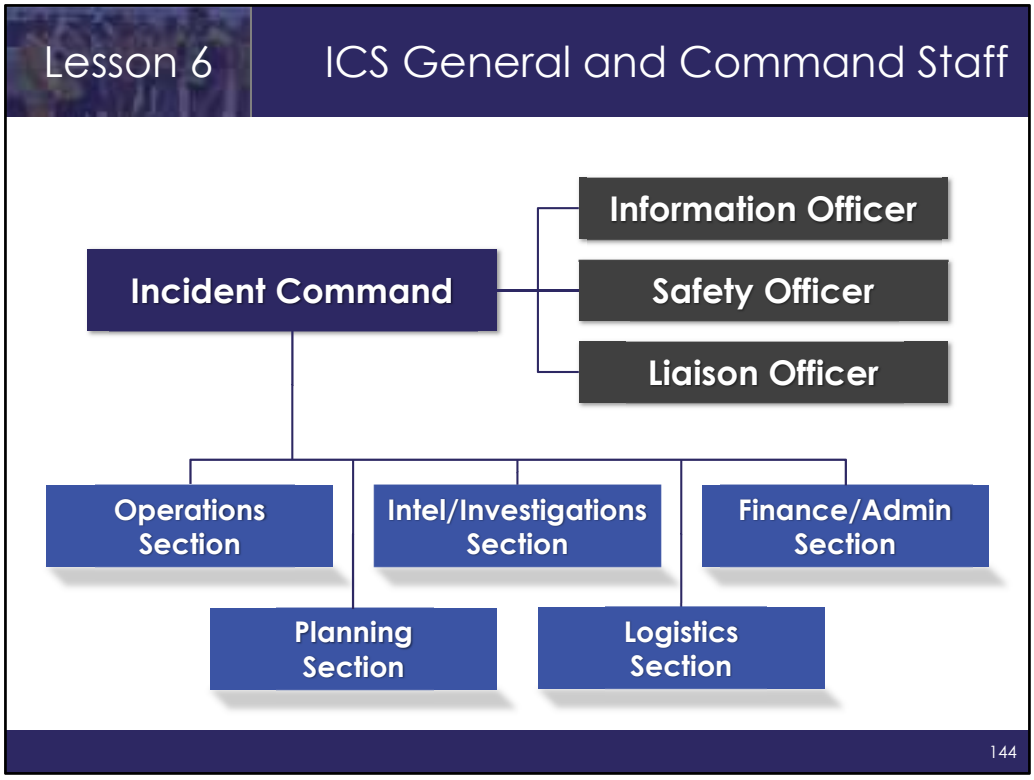
Intelligence/Investigation Section

- Integrates intelligence and information collection, analysis, and sharing, as well as investigations that identify the cause and origin of an incident regardless of source
- Although this section has been part of the ICS structure for many years, it may not have been covered when your students initially took ICS



Source: https://www.fema.gov/national-incident-management-system

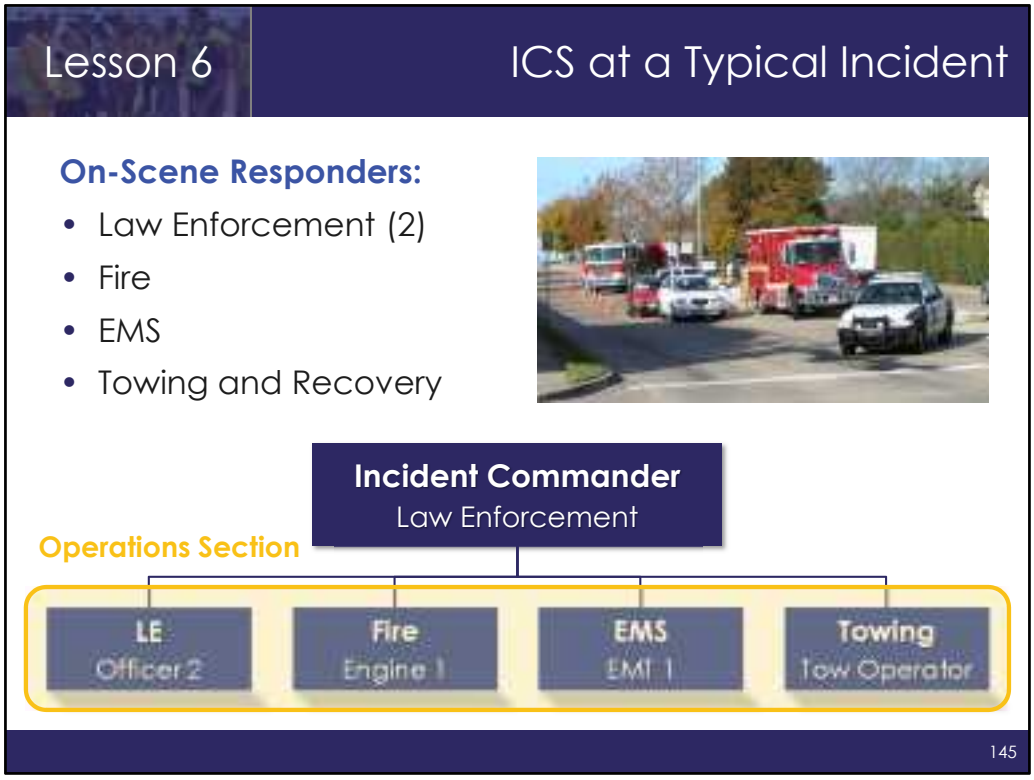
Lesson Objective: 6.1



Lesson Objective: 6.1

- **Animation:** First click forward turns the Information Officer box yellow, the second click turns the Safety Officer box yellow, and the third click turns the Liaison Officer box yellow

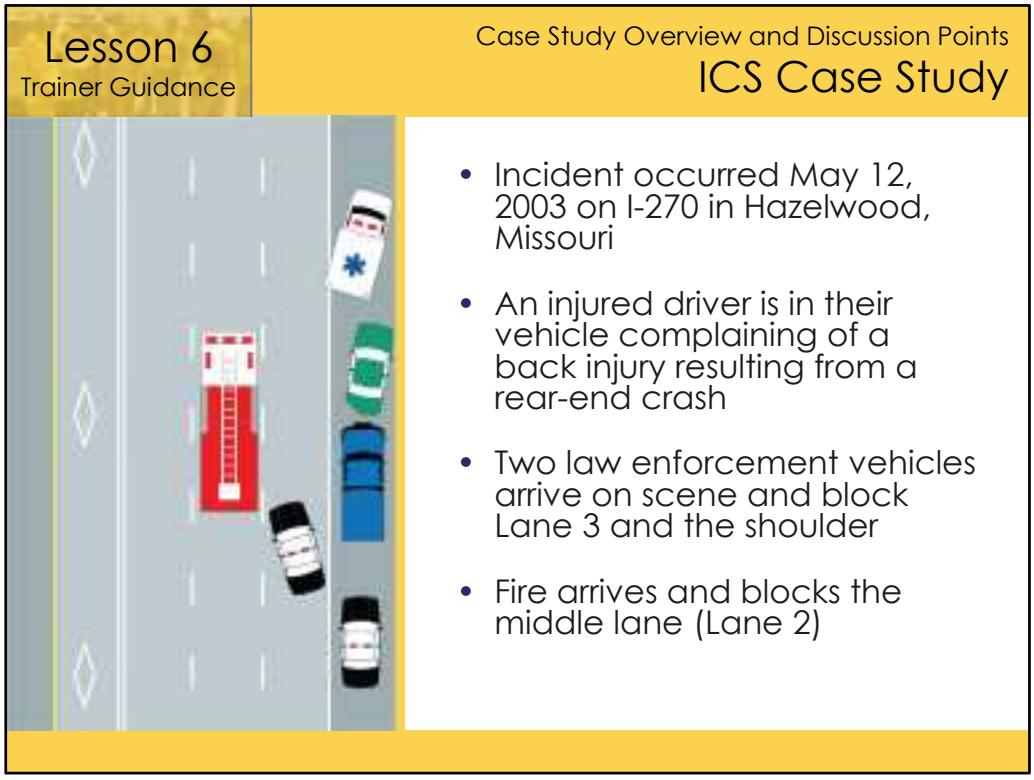
- The Command function is carried out by an Incident Commander or Unified Command
- The Incident Commander is supported by a Command Staff and a General Staff
- The Public Information Officer is responsible for: **[Click 1]**
  - Serving as the go-between for Command and the media
  - Relaying information on the incident and response efforts
- The Safety Officer: **[Click 2]**
  - Is responsible for monitoring scene safety and developing preventative safety measures
  - Possesses the ability to immediately stop any action that is deemed hazardous, unsafe, or too high a risk
  - All responders must adhere to immediate direction/orders from the Safety Officer
  - The Incident Commander can over-ride the Safety Officer's orders after consultation with the Safety Officer and personnel involved in an action that was halted
- The Liaison Officer is responsible for coordinating with representatives from cooperating and assisting agencies or organizations **[Click 3]**
- The leaders of the individual sections are known as the General Staff and individually as Section Chiefs (can be any agency organizational rank)
- Both the Command and General Staff report directly to the Incident Commander or Unified Command



Lesson Objective: 6.1

- **Animation:** First click forward brings up a blank ICS structure, click forward four additional times to illustrate how the on-scene responders fit into the ICS structure, click forward a final time to bring up the Operations Section highlight

- Example of charting of an ICS for a typical highway incident, as illustrated in the picture above, involving law enforcement, fire, EMS, and towing and recovery **[Click 1]**
    - Two law enforcement officers are on-scene **[Click 2]**
    - One fire apparatus is on-scene **[Click 3]**
    - One ambulance crew is on-scene **[Click 4]**
    - It is anticipated that at least one tow truck will be required to clear the scene **[Click 5]**
- In ICS, with all things being equal, the first person on scene is the Incident Commander
- Then, as more qualified and/or appropriate personnel arrive on scene, Command can be transferred
- In this scenario, all on-scene responders would likely fall under the Operations Section **[Click 6]**
- Note that if the DOT/public works, or other responder, arrived on scene they would fit into and be part of the same ICS structure



Lesson Objective: 6.1

- **Animation:** Click forward to make the fourth bullet and fire apparatus appear

- An injured driver is in his vehicle (green vehicle) on the side of I-270 complaining of a back injury resulting from a rear-end collision
- A two-person EMS crew and two law enforcement units are on-scene
    - The ambulance and one law enforcement unit are positioned on the right shoulder
    - The second law enforcement unit is blocking Lane 3
- The fire apparatus arrives and blocks Lane 2 **[Click]**
- The fire crew begins work to support the medical crew and the packaging of the injured driver

Lesson Objective: 6.1

- **Video:** L6-V1_MO_On-Scene_Arrest.wmv

- Following is a synopsis of the video:
  - One of the law enforcement officers on the scene has an issue with where the fire engine has been parked and walks over to the engine and tells the driver to move
  - The driver refuses to move the engine because his captain directed him to park within Lane 2
  - The officer approaches the fire captain who is working on getting the injured motorist out of the vehicle
  - The captain tells the engine driver not to move the vehicle
  - This confrontational situation leads the law enforcement officer to place the fire captain into custody while he is supporting the head of the patient

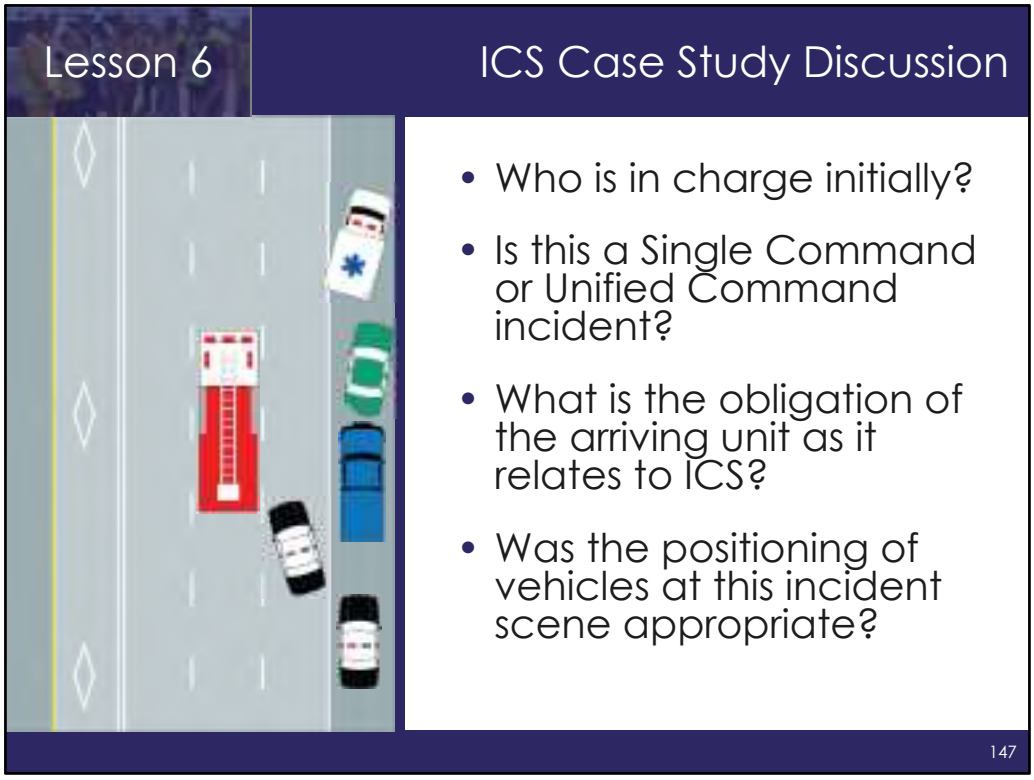
Lesson 6
Trainer Guidance

Case Study Overview and Discussion Points

ICS Case Study

- Critical to focus primary discussion on ICS
  - Initially the incident was likely under Single Command with law enforcement serving as the Incident Commander
  - Upon arriving at the scene, fire has an obligation to check in with Command
    - Can be as simple as a quick face-to-face discussion
- Vehicle positioning and response activities can then be addressed as a secondary topic, including discussion of
  - Existing Lane +1 blocking
  - Possible repositioning of vehicles
  - Allowing the extra lane be closed for a short period of time and addressing concerns in a more appropriate setting
  - Lack of high-visibility safety apparel use by all on scene

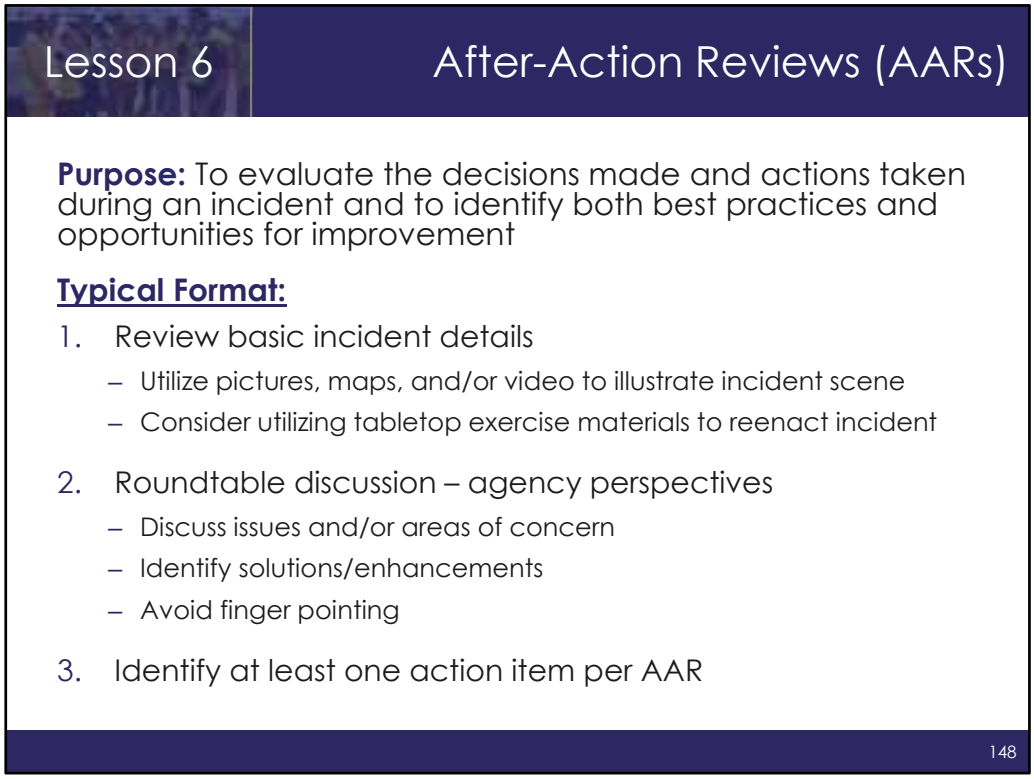
Lesson Objective: 6.1



Lesson Objective: 6.1

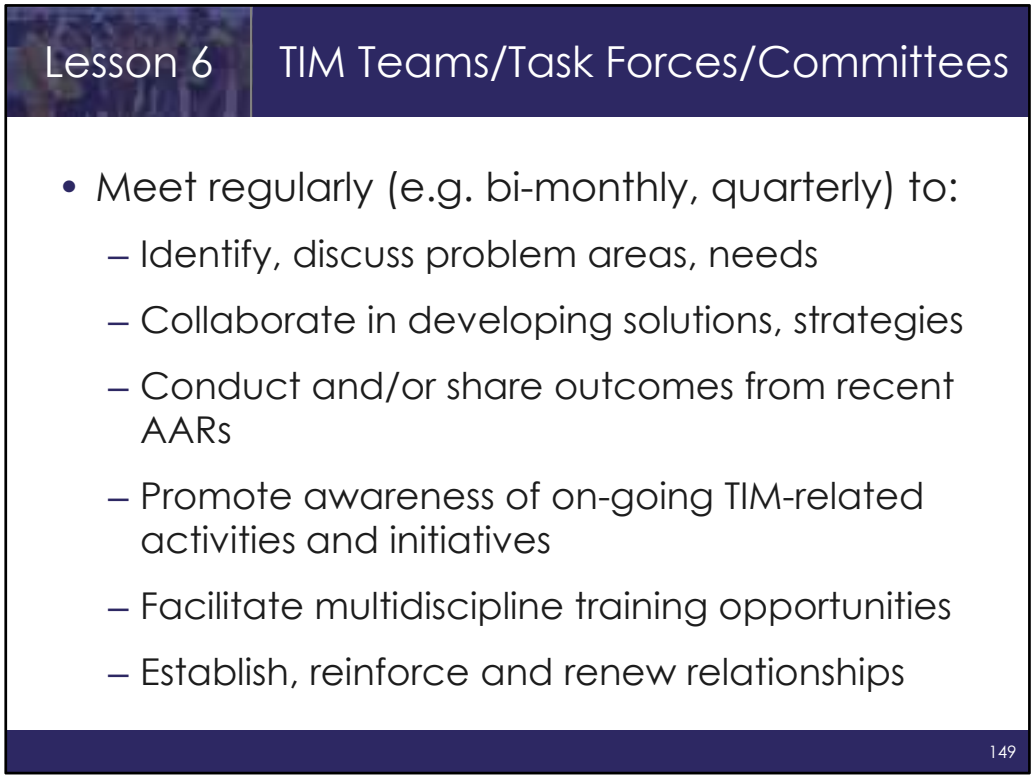
- **Animation:** Click forward to make the second, third (with fire apparatus), and fourth questions appear

- Using the guidance on the preceding instructor slide, discuss the bulleted information with the class **[Clicks 1-3]**
- Additional considerations:
    - The way the fire captain exited the engine is unsafe, not a recommended practice, and violates common safety protocols within the fire service
    - There was a long running personality clash between the officer and the captain



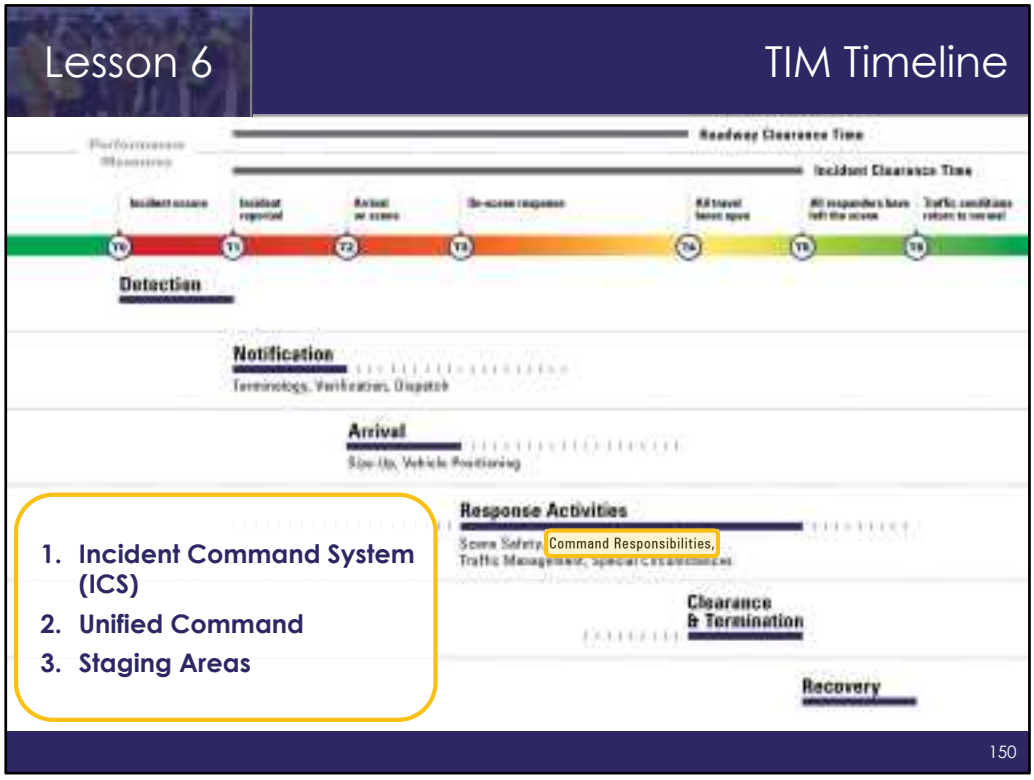
Lesson Objective: --

- Effective AARs provide a constructive forum to identify conflicts and inefficiencies and to then take steps to resolve or eliminate them
- AARs can help open lines of communication and foster relationships between responders
- AARs should be multi-agency and multi-discipline
- TIM program meetings provide a regular opportunity to conduct or review AARs and follow up on resulting action items
- Highlight that AARs can and should also be used for incidents that went well
- If available, consider utilizing tabletop exercise materials to reenact the incident for AAR participants and facilitate discussion
- Additionally, if available, the state or local TMC can be a good source of information to support the AAR



Lesson Objective: --

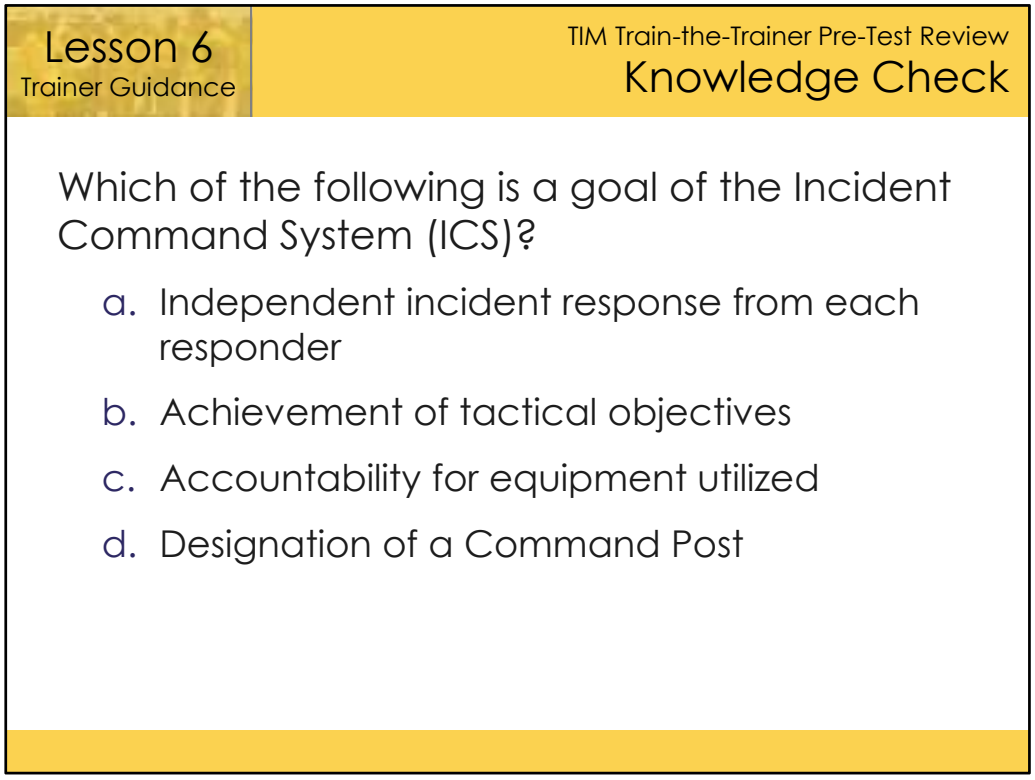
- The foundation of a TIM program is the committee, task force, team, coalition, or other group that meets on a regular basis to discuss TIM issues, challenges, and progress
- To help formalize priorities and maximize available resources, many TIM committees develop a vision, mission statement, and/or goals and objectives to guide their TIM program
- Ideally, participants in TIM meetings take information back to their respective agencies
- Examples of existing TIM programs from across the country are provided below:
    - Florida's Traffic Incident Management Teams
        - http://www.fdot.gov/traffic/Traf_Incident/TIM_Teams.shtm
    - Georgia's Traffic Incident Management Enhancement (TIME) Program
        - http://www.timetaskforce.com/
    - Indiana Traffic Incident Management Effort (IN-TIME)
        - http://www.in.gov/intime/
    - Wisconsin's Traffic Incident Management Enhancement (TIME) Coalition
        - http://www.wisconsintimecoalition.org/



TIM Timeline	Lesson Objectives Review

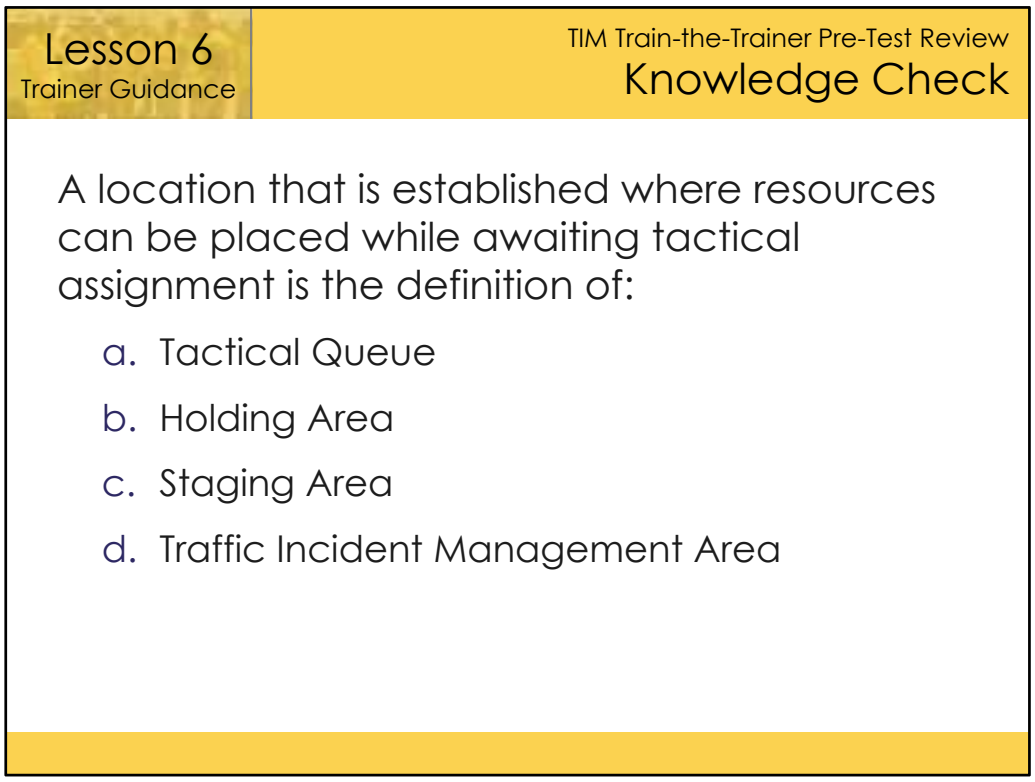
- **Animation:** Click forward to make the small yellow box appear and then click again to bring up the lesson objectives review

- **Ask/Discuss:** How could the effective use of ICS impact the TIM timeline?
  - Highlight that Command should be established at every incident scene as soon as the first responder arrives on-scene



Knowledge Check	Correct Answer: b

- **Answer Reference:** Slide 140



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 143

Lesson 7:
Traffic Management

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Lesson 7 — Lesson Objectives

At the conclusion of this lesson, participants will be able to:

1. Describe the four main components of a **Traffic Incident Management Area**
2. Identify conditions at an incident scene that would require the **Advance Warning Area** be extended
3. Describe the need for, and **how to set up, a taper**
4. Identify and describe the **two types of buffers** that may be established at an incident scene

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Lesson 7
Trainer Guidance

Case Study Overview and Discussion Points

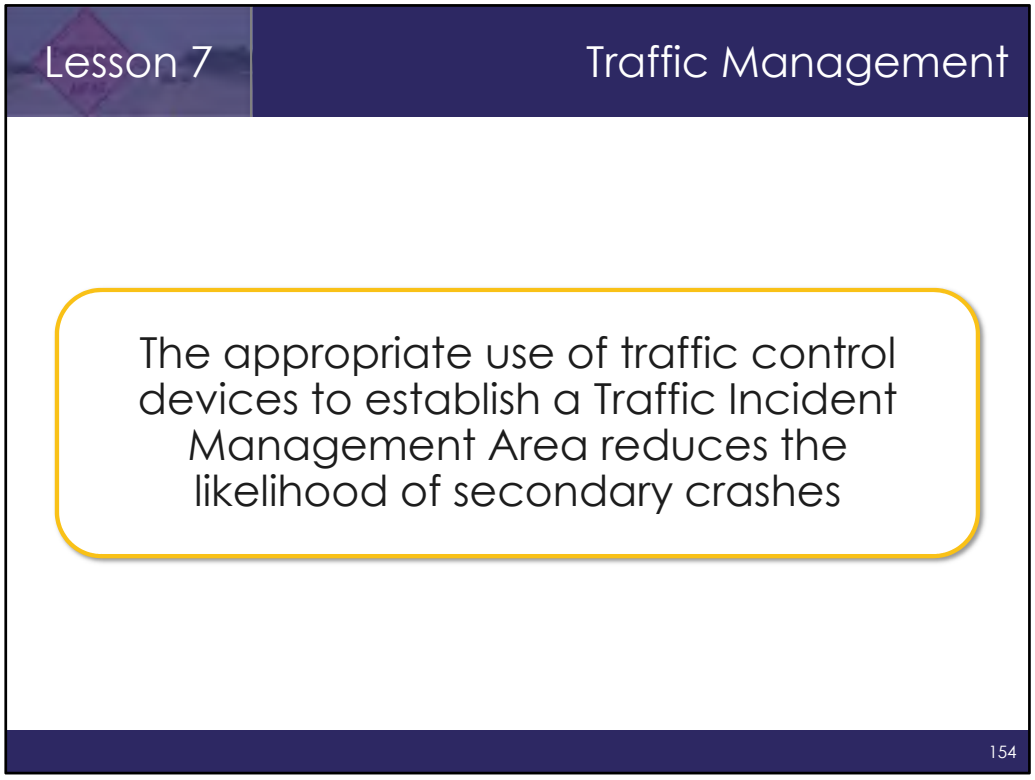
Struck-By Case Study

- Law enforcement dash cam video of the response to a single vehicle crash in Dayton, OH
  - It is 5:30 am in March of 2013
  - Icy roads led to multiple crashes on US 35
- There is one law enforcement vehicle parked on the left (inside) shoulder and one fire apparatus parked in Lane 1 in the opposite direction of the incident
- Discuss how the video highlights the importance of using traffic control devices to establish a Traffic Incident Management Area
  - It is always preferred that vehicles position and response activities occur on the same side of the highway as the incident, but discuss reasons this may not be possible (i.e., distance between exits)
  - Note the importance of maintaining awareness of your own safety when assisting others

Lesson Objective: --

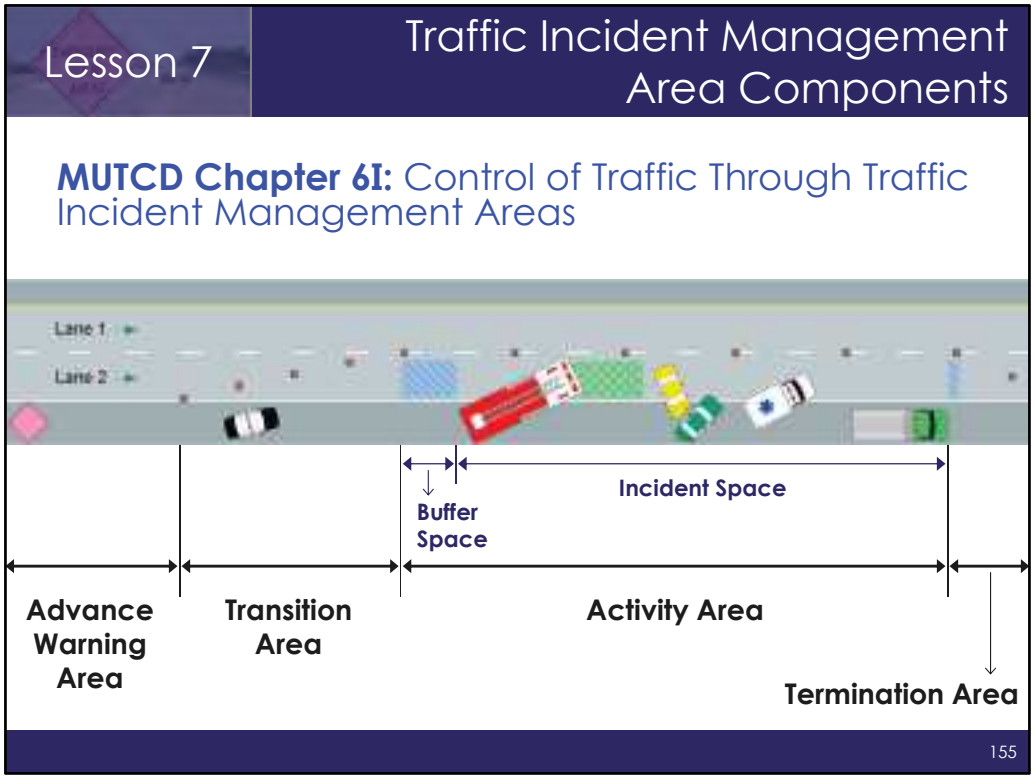
Lesson Objective: --

- **Video:** L7-V1_OH_Struck-By_Case_Study.wmv
- **Ask/Discuss:** Debrief the video
- Captain Barry Cron narrowly avoided a secondary crash and while he was checking on the victim, a third vehicle struck the second vehicle and threw him 20 feet away
- Captain Cron suffered 3 broken ribs and a broken leg, but was thankful to be alive



Lesson Objective: --

- The primary functions of temporary traffic control (TTC) at a Traffic Incident Management Area are:
  - Inform road users of the incident
  - Provide guidance information on the path to follow through the incident area
  - Protect incident responders and other persons involved in the incident
  - Aid in moving road users expeditiously past or around the traffic incident
  - Reduce the likelihood of secondary traffic crashes

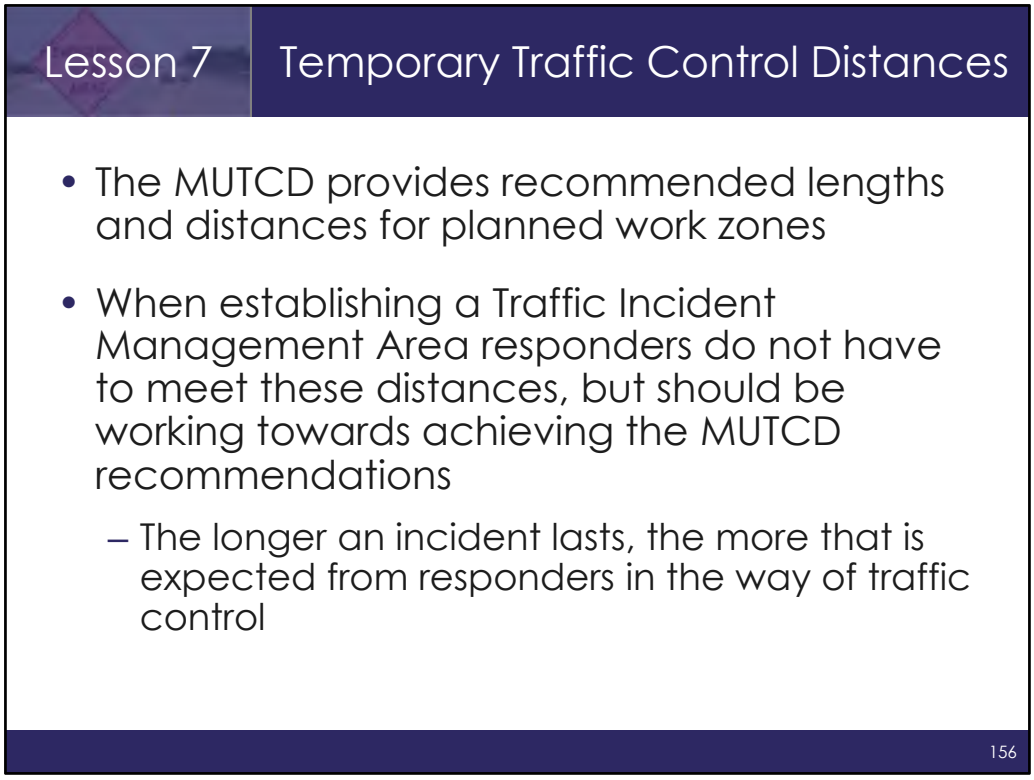


Lesson Objective: 7.1

- A Traffic Incident Management Area is a type of temporary traffic control zone
- While there are similarities, there are also significant differences between a work zone and a traffic incident
    - The time to plan and availability of resources are the main differences between the two
- A Traffic Incident Management Area is a type of emergency event
- Review the four main components of a Traffic Incident Management Area, which will be discussed in detail in this lesson:
    - Advance Warning Area
    - Transition Area
    - Activity Area
    - Termination Area
- The Activity Area is further comprised of a Buffer Space and an Incident Space

Reference:

- Appendix D.1 – MUTCD Chapter 6I – Control of Traffic Through Traffic Incident Management Areas



Lesson Objective: 7.1

- Per the MUTCD:
  - For Minor incidents:
    - When a minor traffic incident blocks a travel lane, it should be removed from that lane to the shoulder as quickly as possible
  - For Intermediate and Major incidents, more is required of responders:
    - All traffic control devices needed to set up the TTC at a traffic incident should be available so that they can be readily deployed
    - The TTC should include the proper traffic diversions, tapered lane closures, and upstream warning devices to alert traffic approaching the queue and to encourage early diversion to an appropriate alternative route

Lesson 7 Temporary Traffic Control Distances

	Advance Warning Area				Transition Area			Activity Area	Termination Area	
Speed (mph)	Advance Warning Sign Minimum Distance (ft)				Recommended Lengths (ft)					Cone Spacing (ft)
	A	B	C	Cumulative Total	Shoulder Taper	Taper	Distance Between Tapers (longitudinal)	Buffer (longitudinal)	Downstream Taper	
25	100	100	100	300	45	125	250	155	50-100	25
35	350	350	350	1,050	85	245	490	250		35
45	500	500	500	1,500	180	540	1,080	360		45
55	1,000	1,500	2,640	5,140	220	660	1,320	495		55
65	1,000	1,500	2,640	5,140	260	780	1,560	645		65
75	1,000	1,500	2,640	5,140	300	900	1,800	820		75

A: Distance from the Transition Area to the first sign

B: Distance between the first and second signs

C: Distance between the second and third signs

Source: 2009 MUTCD

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Lesson Objective: 7.1

- The distances provided in this table are specifically for work zones
- The top of the table shows the four components of a TTC zone
- Along the left column is the speed limit of the roadway
- The distances for the advance warning signs are listed
    - Nearly 1 mile upstream for a 65 mph roadway
- The cumulative total is the total distance measured from the Transition Area to Advance Warning Sign C
- Note that the shoulder taper was rounded up to nearest 5 feet
- The length of a taper on a 65 mph roadway would be 780 feet
- The distance between tapers is used when multiple lanes are closed
- If an incident is anticipated to extend past 24 hours, MUTCD states that requirements for work zones should be used

- **Ask/Discuss:** Are any of these distances achievable in a TIM scenario?

- Ask the students to remember that the upstream (longitudinal) buffer on a 65 mph roadway is 645 feet

Lesson 7
Trainer Guidance

Presentation Format

Traffic Incident Management Areas

- Following is a detailed discussion of each component and sub-component of a Traffic Incident Management Area
- The sample Traffic Incident Management Area graphic is depicted at the bottom of each definition slide
- For each definition slide, the section of the roadway with the corresponding component or sub-component being discussed will be highlighted on the graphic using a yellow box

Lesson Objective: 7.1

Lesson 7 — Advance Warning Area

- Established upstream of the incident to alert drivers of the upcoming incident scene
  - Should also be upstream of any traffic queues so that warning is given to road users before encountering stopped traffic
- Should be high priority for emergency responders
- A shoulder taper, set up using traffic cones, may also be established in the Advance Warning Area

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Lesson Objective: 7.1

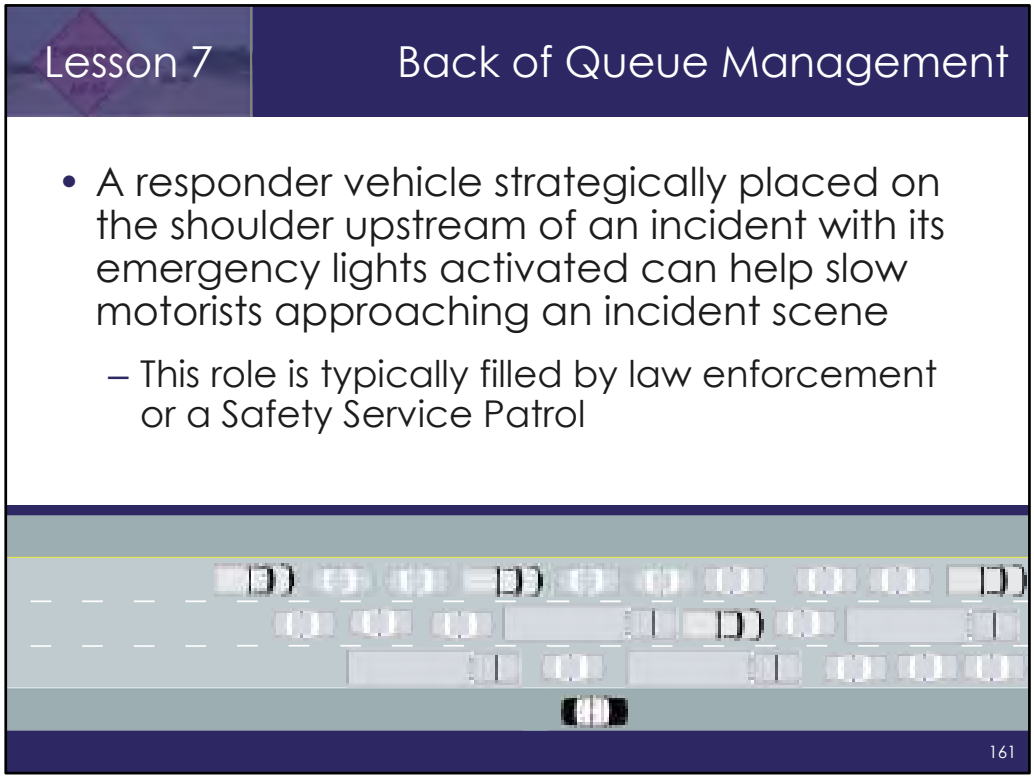
- All advance warning devices should be placed so that they will provide enough warning for vehicles to slow before reaching the incident and any queue that might form
- Advance warning should be a high priority for responders, particularly in the cases of reduced visibility which will be discussed later
- The shoulder taper is used to advise motorists that the shoulder is closed ahead
  - Due to limited resources (availability of cones) a typical Traffic Incident Management Area will likely not include a shoulder taper

Lesson Objective: 7.1

- To distinguish Traffic Incident Management Areas from work zones, the MUTCD has assigned fluorescent pink to incident management
- Warning signs used for incident management situations can have:
  - Diamond shape
  - Black lettering and a black border
  - Fluorescent pink background
- Note that although pink is reserved for incident management in the MUTCD, standard orange warning signs can still be used at incident scenes, especially if pink ones are not available
- Warning signs come in two sizes:
  - 36" x 36" – Low speed, low volume
  - 48" x 48" – High speed, high volume
- These signs are being carried by many fire crews and Safety Service Patrols
- Explain that the sign is on the shoulder, in advance of the taper
- The placement of an advance warning sign might be accomplished by a fire crew immediately prior to arrival on the scene, or by a secondary responder
- In addition to 'Emergency Scene Ahead,' merge left/right and 'Be Prepared To Stop' are common advance warning signs used for traffic incident management

Lesson Objective: 7.1

- The MUTCD contains information about changeable message signs (CMS), which are another tool for providing advance warning
    - Also referred to as variable message signs (VMS) or dynamic message signs (DMS) in some areas
- CMS are typically controlled by a TMC or transportation agency
    - These agencies often develop a standard message library to facilitate sign use and limit the possibility of confusing and/or inappropriate messages
    - However, terminology does vary from one agency to the next (e.g., use of "blocked" versus "closed")
- Shown are examples of overhead, permanent CMS, as well as vehicle-mounted systems that are commonly used by transportation agencies and Safety Service Patrols
- Message boards that are mounted on trailers can also be used, but due to logistics constraints, are typically only used in longer-term incidents
    - These signs are often referred to as portable changeable message signs (PCMS)



Lesson Objective: 7.2

- **Animation:** Click forward once to make queue grow and have the law enforcement vehicle move back, click again to repeat

- This can be effective in dangerous situations or when the back of the queue is growing and the warning must change and move with the expanding queue **[Clicks 1-2]**

Lesson 7

Advance Warning Considerations – Limited Sight Distances

- Additional or earlier advance warning may be necessary due to limited sight distances created by roadway geometry
  - Hills
  - Curves
  - Bridges
  - Intersections

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Lesson Objective: 7.2

- One advance warning adjustment consideration involves limited sight distance
- A small elevation change or curvature in the roadway can obstruct a driver's view, as can smoke, fog, and darkness
- Once it has been determined the incident is a limited sight distance situation:
  - Position your vehicle further upstream of the scene than normal to serve as advance warning and keep your lights on
  - Contact other responding units and advise them of the exact location and request they position for extended advanced warning
  - Setup temporary warning and traffic control with available cones and signs

Lesson 7 — Advance Warning Considerations – Adverse Conditions

- Additional advance warning may also be necessary during adverse conditions, such as rain, snow, ice, smoke, fog, darkness, etc.
  - Wet roads double the average motorist stopping distance over that for dry road conditions
  - Poor visibility can lengthen driver reaction time
  - Increases responder's degree of risk



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Lesson Objective: 7.2

- Lighting, road, and weather conditions should also be taken into account when setting up an Advance Warning Area
- Bad weather, such as rain, fog, and snow, all create significant responder risks
- Wet roads double the average motorist's stopping distance over that for dry road conditions, and poor visibility can lengthen driver reaction time
  - These combined increase responders degree of risk
- With these concerns in mind, the Advance Warning Area should be extended to compensate when such conditions exist
- Note that even on clear days, drivers can still experience adverse conditions in the form of sun glare as illustrated by the bottom left picture

Lesson 7 Transition Area and Tapers

- Section of roadway where drivers are redirected out of their normal path
- Transition Areas usually involve the strategic use of tapers
  - Tapers can be set up using cones or flares
- No vehicles should be positioned within the tapered portion of the closed lane

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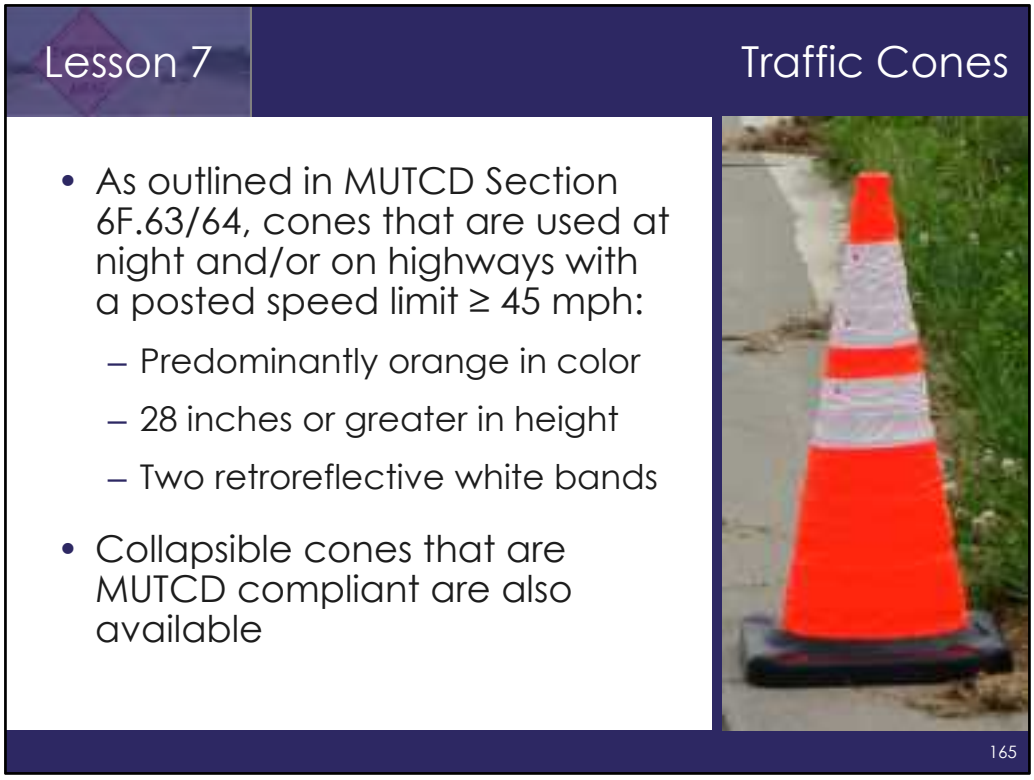
Lesson Objectives: 7.1 and 7.3



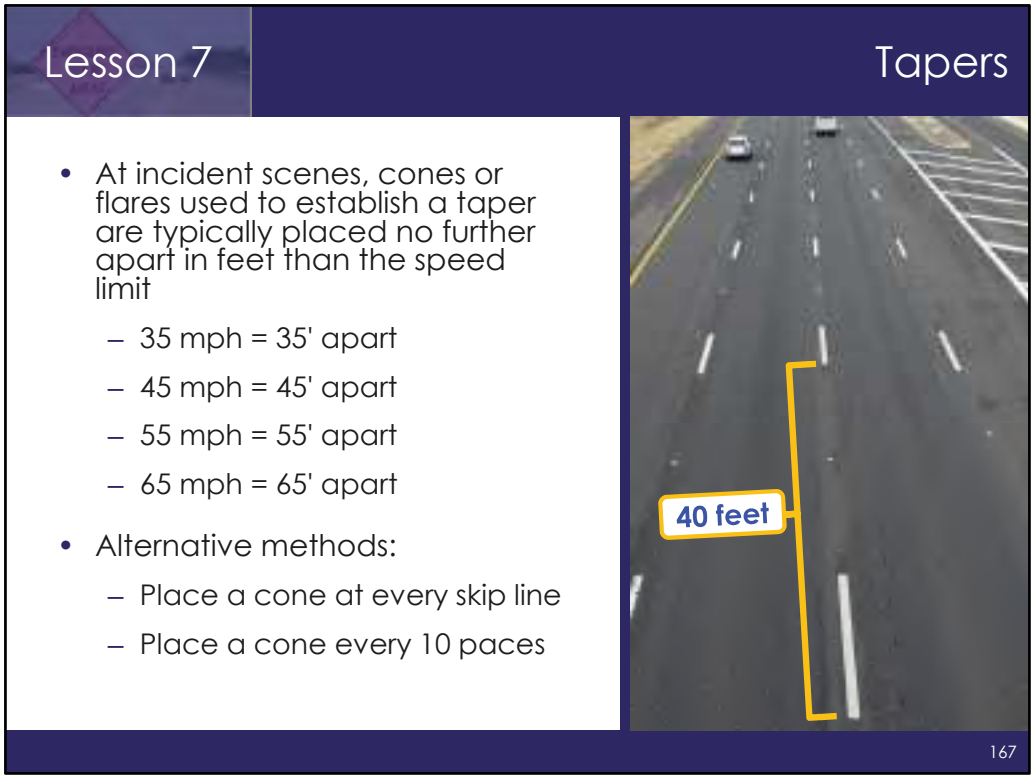
Lesson Objective: 7.3

- **Animation:** Click forward to make collapsible cone picture appear

- Traffic cones are a type of channelizing device used to direct traffic
- There is no MUTCD requirement that responders carry traffic cones
- The MUTCD does require appropriate traffic control for intermediate and major incidents, so their use at incident scenes is required
- Response vehicles are typically not designed to hold more than a few cones, and a cone's shape and size present storage issues
- For nighttime use and on roadways with speeds over 45 mph, a 28 inch cone is specified in the MUTCD
- Collapsible traffic cones are available, but price and durability warrant some caution **[Click]**

Lesson Objective: 7.3

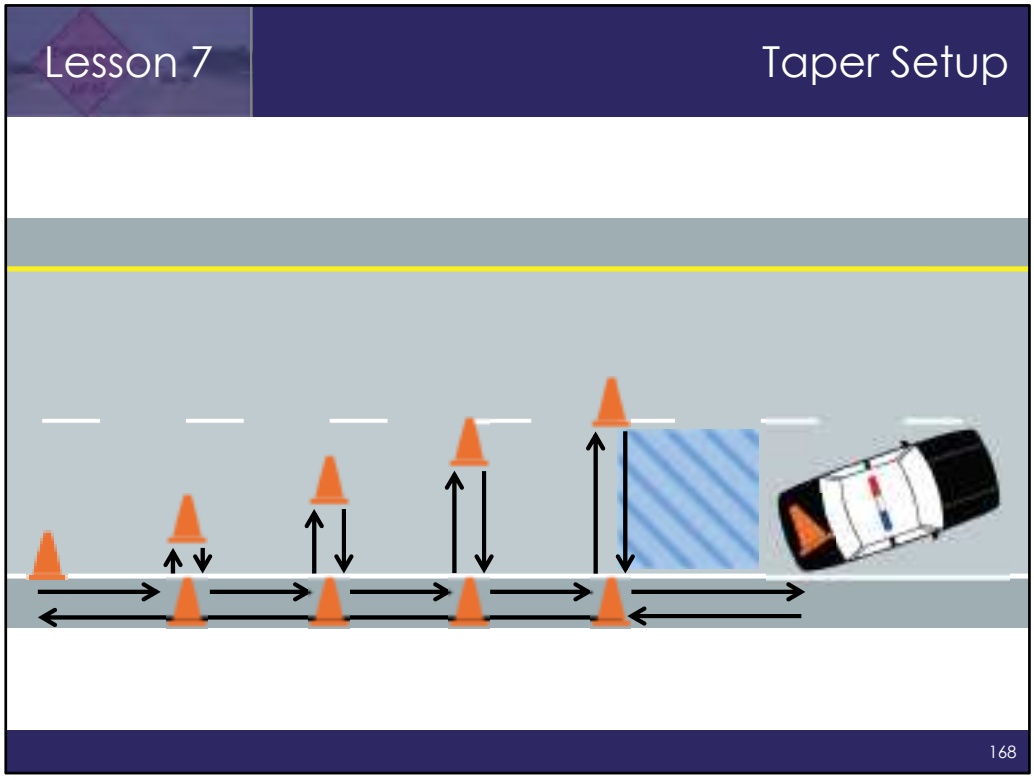
- Nighttime channelizing devices are available
  - Flares or fusees
  - Chemical light sticks
  - Light emitting diodes
- Nighttime devices can augment the use of traffic cones when strategically placed



Lesson Objective: 7.3

- **Customization:** Although the typical skip line distance from start-to-start or end-to-end is 40 feet, some states use a different distance
    - The text box in the picture above can and should be updated to reflect the standard distance in your state

- Channelizing devices, such as cones, are typically spaced according to the speed of the roadway
- As an alternative, skip lines provide a useful guide for setting up tapers
- On roadways without skip lines, placing cones 10 paces apart is a simple and effective alternative

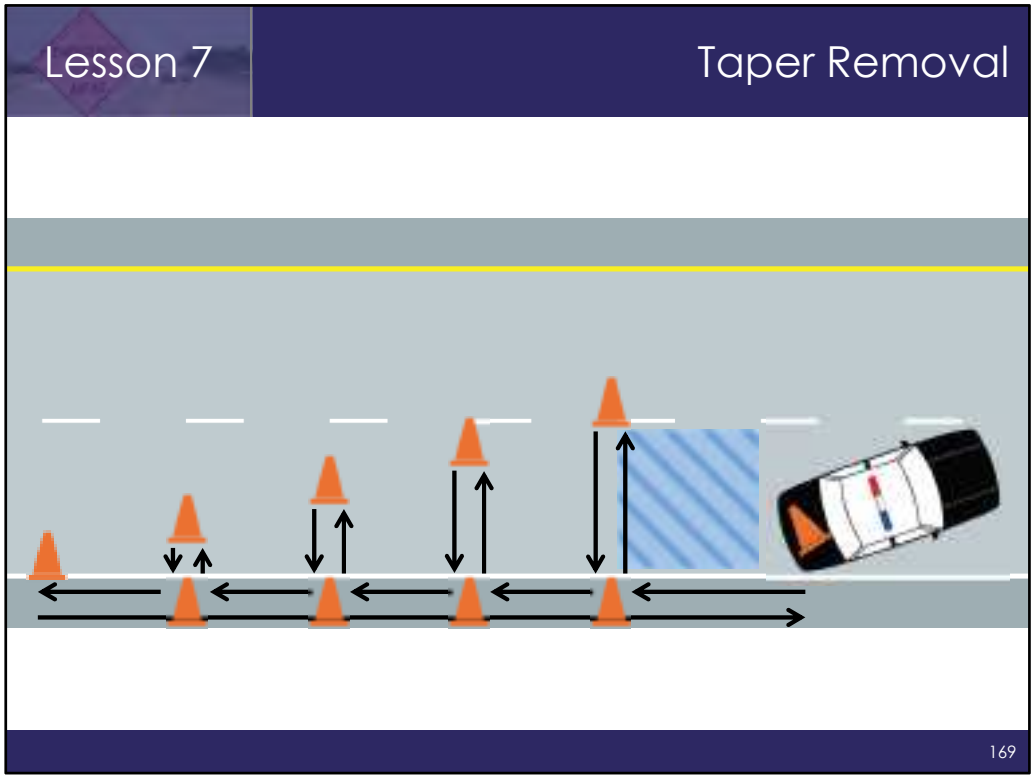


Lesson Objective: 7.3

- **Animation:** Click forward to illustrate a taper setup following the steps outlined below for a total of six clicks

- The deployment of 5 cones to block one traffic lane is demonstrated
- In this example, the skip lines are used to guide taper setup
- The methodology has the responder use the refuge of the shoulder throughout deployment

1. The responder retrieves available cones from the trunk placing one a reasonable distance from the responder vehicle on the edge line, allowing for a buffer **[Click 1]**
    - Note that the blue highlighted area is the Upstream (Longitudinal) Buffer Space, which will be discussed in more detail shortly
2. Walking along the shoulder, facing traffic, a cone is subsequently placed on the edge line at each skip line (alternatively, they can be placed every 10 paces) **[Click 2]**
3. When the last cone has been placed on the edge line, the responder begins walking backwards until the next cone is reached **[Click 3]**
4. The responder takes one lateral step into the travel lane and places the cone, immediately returning to the shoulder – facing traffic **[Click 4]**
5. The responder again walks backwards until the next cone is reached and then takes two lateral steps into the travel lane to place the cone, immediately returning to the shoulder **[Click 5]**
6. The steps are repeated until all cones are deployed **[Click 6]**



Lesson Objective: 7.3

- **Animation:** Click forward to illustrate taper removal

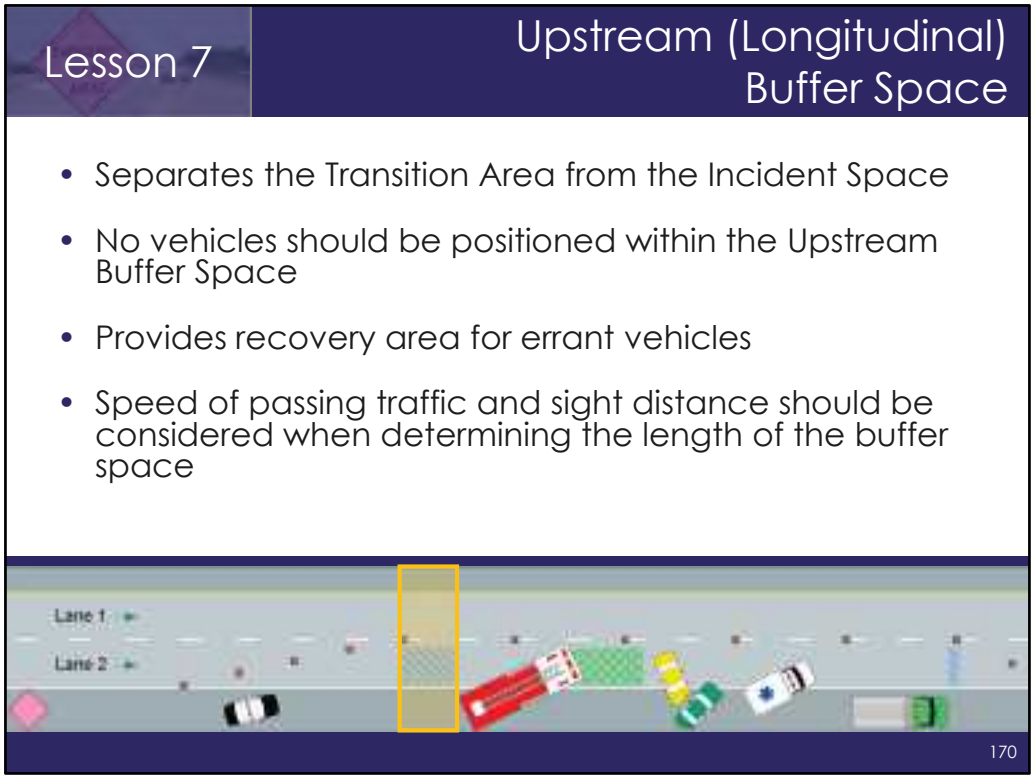
- Removing temporary traffic control is done in the reverse order of the way it was deployed **[Click]**
- If available, a separate responder vehicle may be positioned to provide a protective block upstream of the taper while the responder removes the cones

Lesson 7
Trainer Guidance

Training Supplement
Outdoor Activity

- While the preceding slides covered the critical content, the learning objectives can be reinforced through use of an outdoor activity/demo
- It is ideal to utilize a flat, open area that is approximately 25' wide and 100' long and isolated from moving traffic
- Items required for the activity include, at a minimum:
  - A responder vehicle
  - Five traffic cones
  - A responder wearing HVSA
- Demonstrate:
  - How to safely exit an emergency vehicle
  - How to properly set up a taper

Lesson Objective: 7.3



Lesson Objectives: 7.1 and 7.4

- The Upstream Buffer Space covers the distance between the Transition Area and the Incident Space
- In work zone settings, this space is determined based on the stopping sight distance of a vehicle traveling at the posted speed limit
- The Buffer Space in TIM applications will typically be fairly short due to the limitation of channelizing devices
- When additional resources are available, the buffer should be expanded to accommodate errant vehicles
- In the example shown here, the Upstream Buffer Space covers one skip line, which is approximately 40 feet
    - In the TIM world, responders should provide as much buffer as available resources allow
    - To put things in perspective, recall from the work zone distances table that on a 65 mph roadway the Upstream Buffer Space would be 645 feet

Lesson 7 — Flagger

- Flaggers should use clear and distinct hand signals and must wear high-visibility safety apparel
- Flaggers should stand either on the shoulder or in the closed lane prior to stopping road users
- Flaggers should be stationed sufficiently in advance of the responders to warn them of approaching danger
- Flaggers should stand alone, away from other responders, vehicles, or equipment

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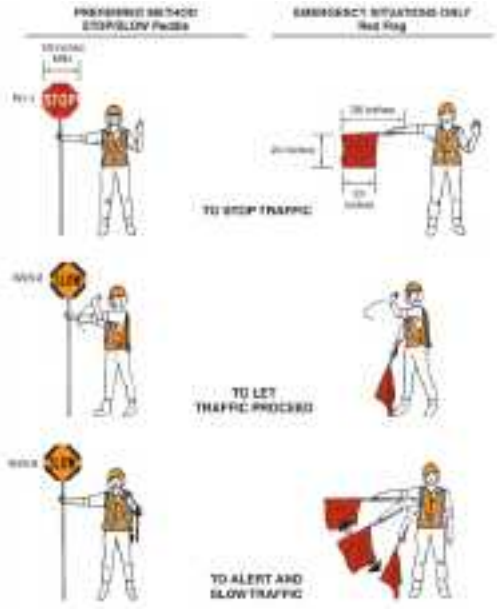
Lesson Objective: --

- MUTCD 6I states that if manual traffic control is needed, it should be provided by qualified flaggers or uniformed law enforcement officers
    - Training requirements for being a flagger vary by state

Lesson 7

MUTCD Use of Hand-Signaling Devices By Flaggers

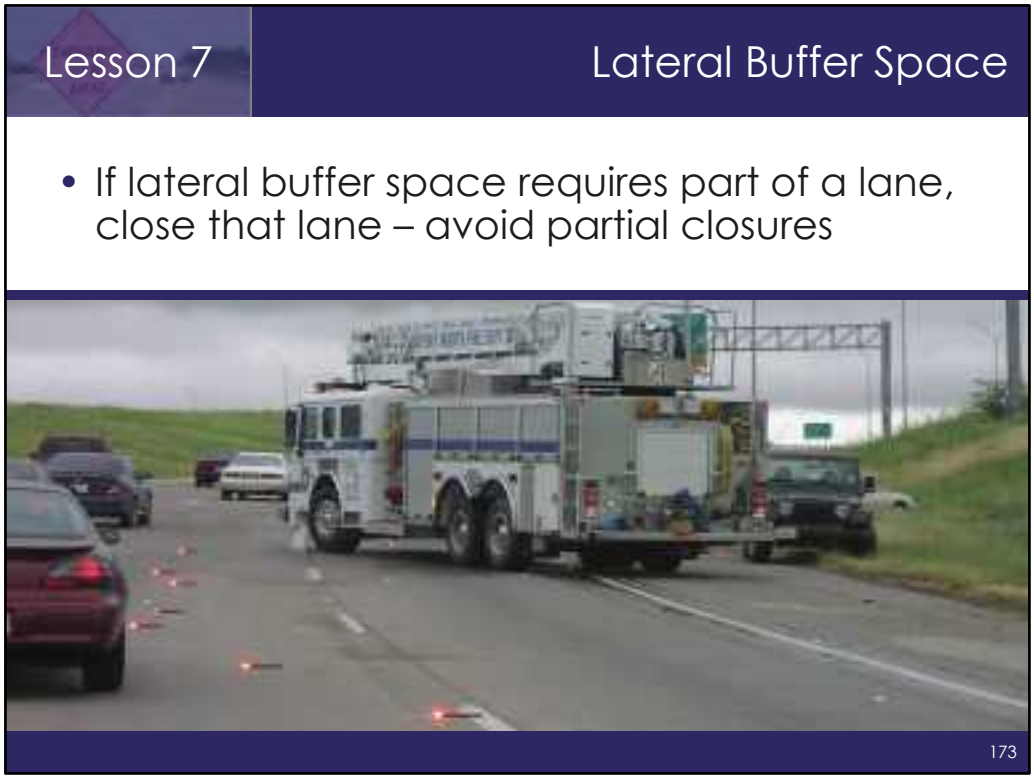


Source: 2009 MUTCD

172

Lesson Objective: --

- MUTCD diagram of flagger operations



Lesson Objective: 7.4

- Lateral buffer space is the area between the incident space and the adjacent travel lane
- Lateral buffer space can be beneficial because it allows for more room for responders to work
- Lateral buffer space can be accommodated through the use of Lane +1 blocking
- As shown in the photo, partial lane closures are not recommended because they can confuse drivers and decrease scene safety
    - Possible solutions for this situation include:
        - Reposition fire apparatus
        - Realign flares

Lesson Objective: 7.1

- The Incident Space is also called the Work Space in temporary traffic control zone terminology

Lesson 7 Incident Space

- A blocking vehicle should be positioned at the upstream end of the Incident Space to protect workers from impacts by errant vehicles
- Adequate space should be provided on the roadway to allow for roll ahead of the blocking vehicle should it be struck
  - Should be done without creating enough space to encourage or permit a vehicle to mistakenly enter the area between the blocking vehicle and the workers or hazard

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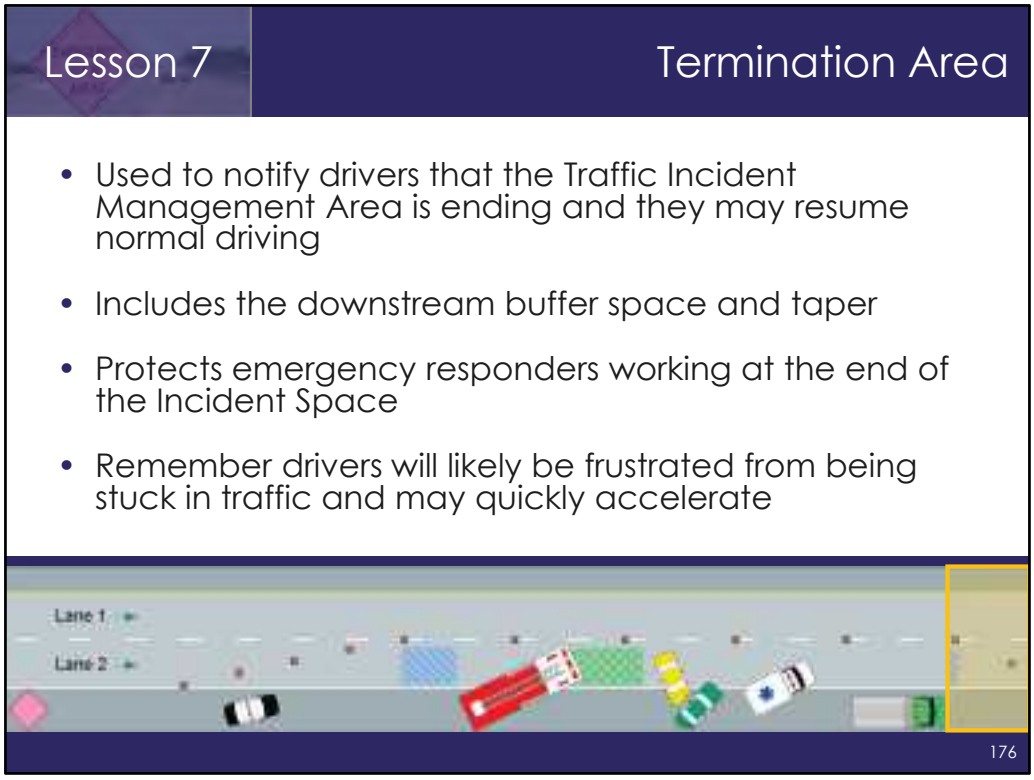
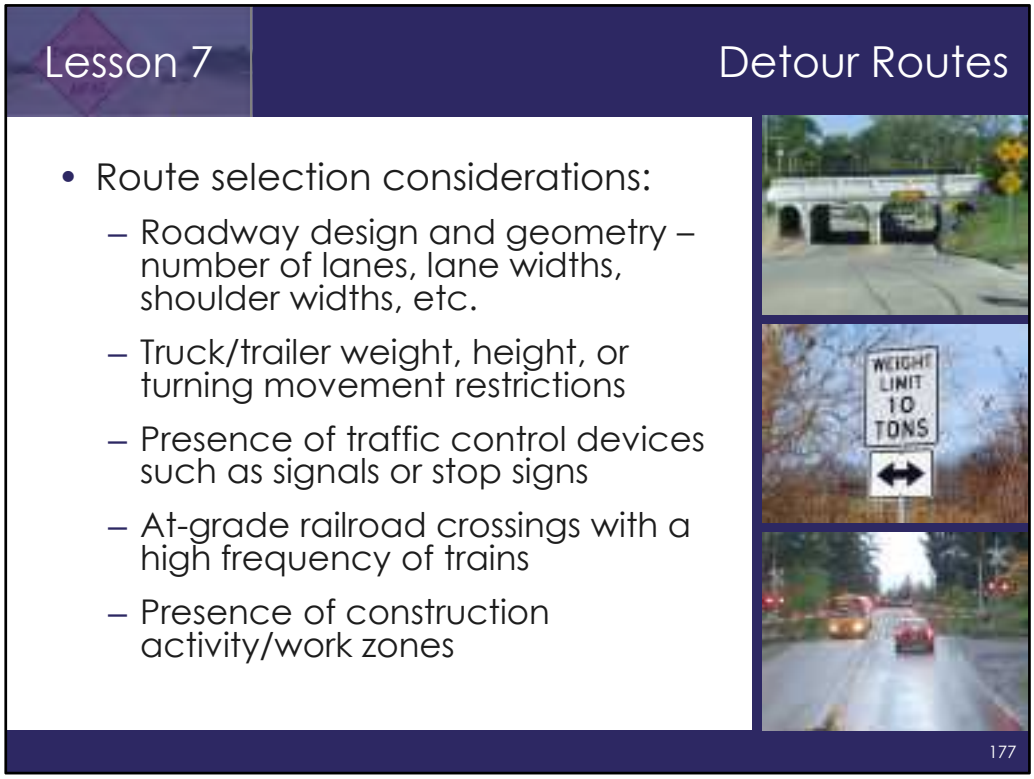
Lesson Objective: 7.1

- Once traffic control devices are in place, the blocking vehicle is positioned at the upstream end of the Incident Space to protect workers and civilians
- The MUTCD also uses the term shadow vehicle to describe the blocking vehicle
- As outlined in the MUTCD, the blocking (or shadow) vehicle should be positioned a sufficient distance in advance of responders to absorb contact (illustrated by green area on graphic)
- The distance to the scene should not impede access to responder gear and should not allow errant vehicles to travel around the blocking vehicle and re-enter the lane prematurely
- Cone placement alongside the Incident Space can help dissuade premature re-entry



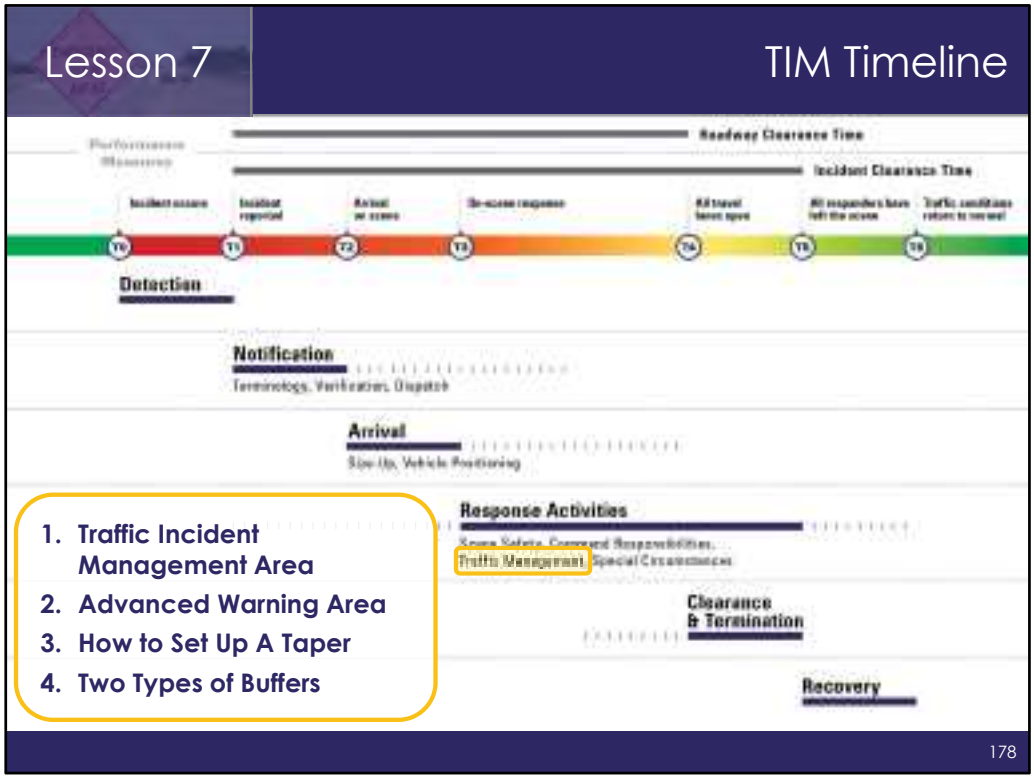
Lesson Objective: 7.1

- The Termination Area is typically small in TIM applications
- The last channelizing device and/or responder vehicle typically signals the end or termination of the Traffic Incident Management Area



Lesson Objective: --

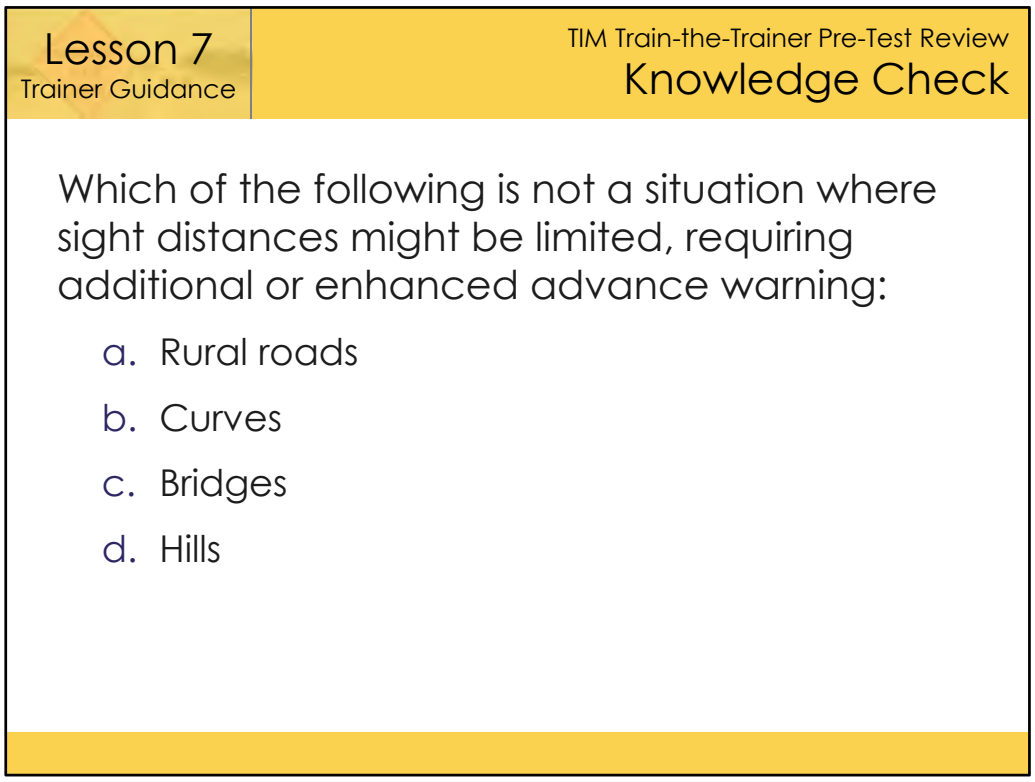
- Detour routes, also referred to as emergency alternate routes, are one tactic used for managing traffic around an incident scene
- Factors to consider before implementing:
  - Expected incident duration
  - Incident type
  - Traffic impacts on affected highway and alternate route
- In some areas, detour routes are pre-planned and may even be signed in the field
- Detour routes should only be used in emergency situations
- Other route selection considerations include:
  - Utilization of highways with higher speed limits
  - Proximity of detour route to diverted roadway
  - Existing signing back to primary route
  - Current pavement conditions
  - High volume pedestrian areas
  - Residential areas or school zones
- Any time traffic is routed through a local jurisdiction, notification should be made to the appropriate agencies
- It some situations, it may be beneficial to consider identifying a commercial vehicle detour route that is different than the passenger vehicle detour route



TIM Timeline | Lesson Objectives Review

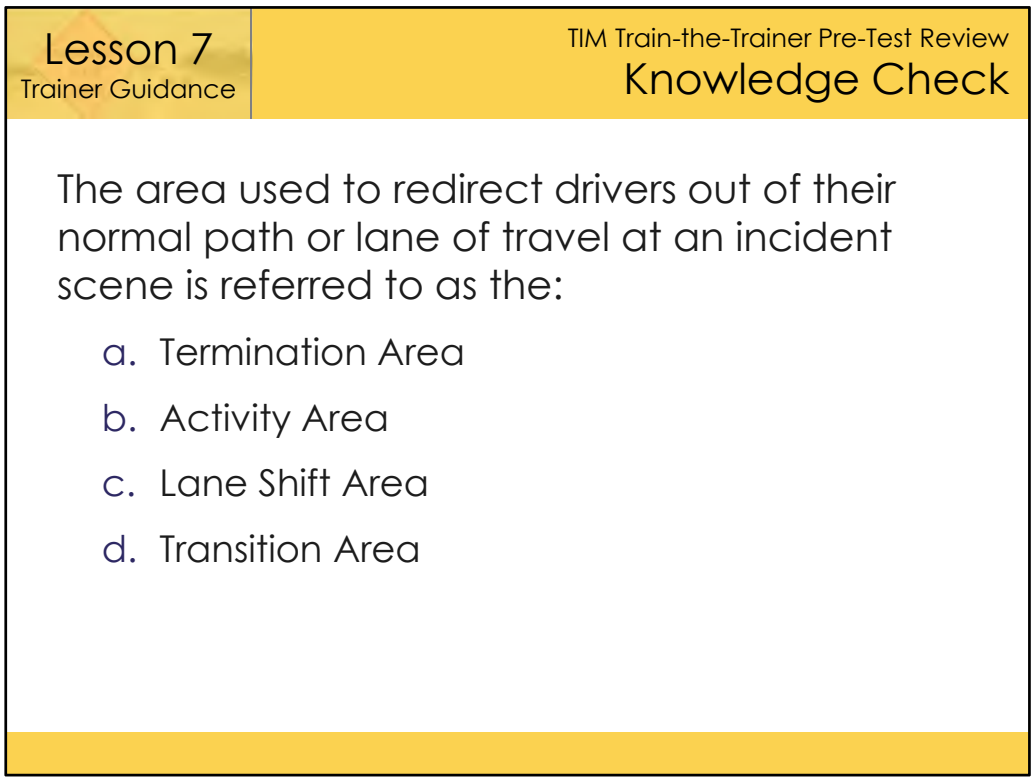
- **Animation:** Click forward to make the small yellow box appear and then click again to bring up the lesson objectives review

- **Ask/Discuss:** How does proper traffic management impact the TIM timeline?
    - Highlight that traffic management activities may occur even before arrival on scene if there is a TMC in the area
        - For example, the TMC may be able to provide advance warning through use of a CMS



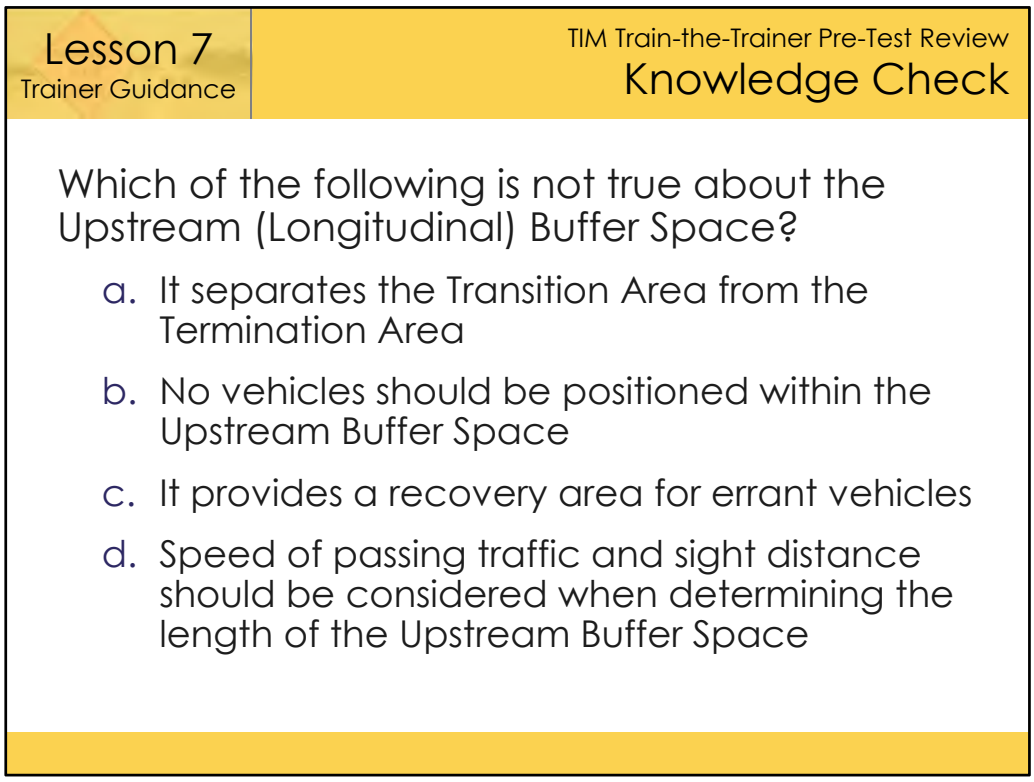
Knowledge Check	Correct Answer: a

- **Answer Reference:** Slide 162



Knowledge Check	Correct Answer: d

- **Answer Reference:** Slide 164



Knowledge Check	Correct Answer: a

- **Answer Reference:** Slide 170

Lesson 8:
Special Circumstances

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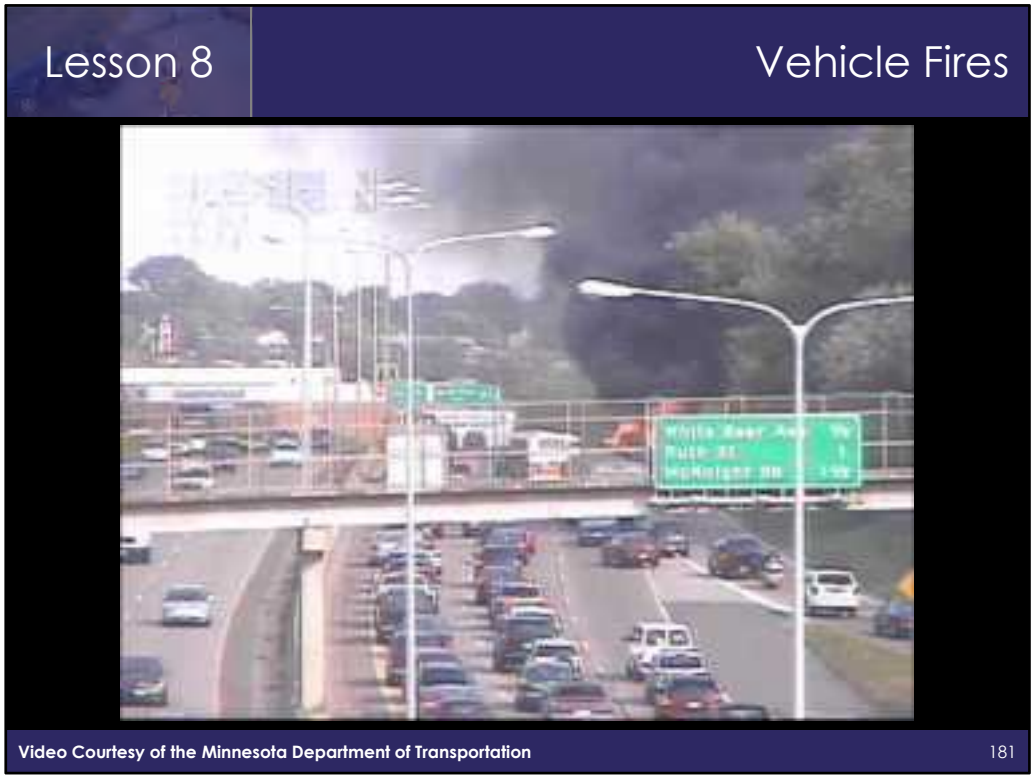
Lesson 8 — Lesson Objectives

At the conclusion of this lesson, participants will be able to:

1. Identify the **safety concerns** related to responding to an incident involving a **vehicle fire**
2. Describe how to **identify** what **hazardous material** is being transported
3. Recount good practices for responding to an incident involving a **vehicle fluid spill**
4. Describe the primary goal of a **crash investigation** and the importance of preserving **short-lived evidence**

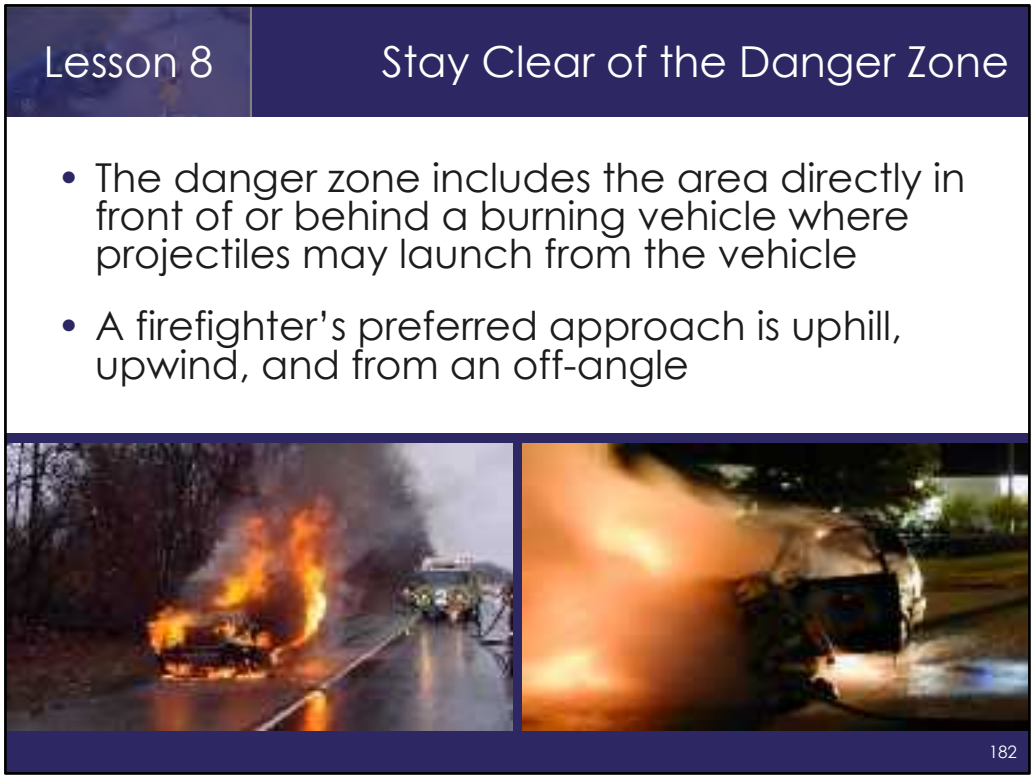
180



Lesson Objective: 8.1

- **Video:** L8-V1_MN_Minivan_Fire.wmv

- This video highlights the potential dangers encountered at vehicle fires and the need for shutting down additional lanes during vehicle fires
- The first traffic camera perspective shows a burning minivan on the right shoulder of the highway, well involved in fire
    - This is an older Ford minivan with a plastic-type fuel tank
- The second traffic camera view is of the same scene from the opposite direction

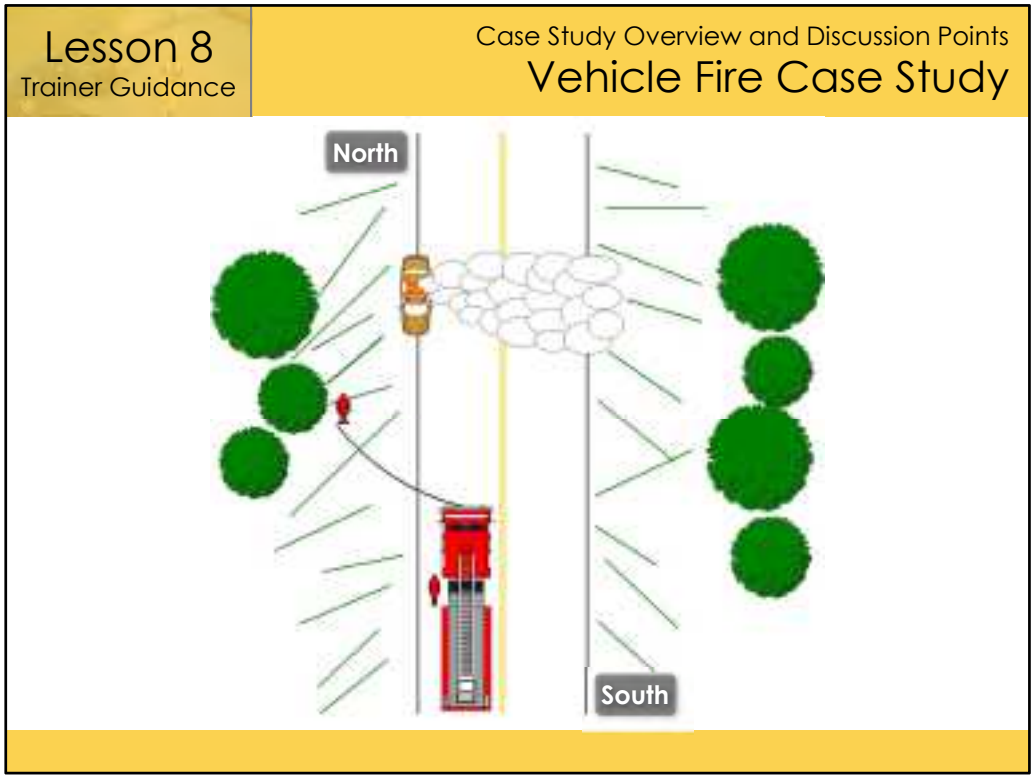


Lesson Objective: 8.1

- A vehicle fire presents a danger zone that surrounds the vehicle
- Non-firefighting responders should remain clear of all sides of a burning vehicle, and remain uphill and upwind of the incident
- A burning vehicle should be approached from a vantage point other than the front or rear of the vehicle
    - It presents the greatest risk if a bumper system component or other type of pressurized component should rupture and launch off the vehicle
    - In general, any approach to a burning vehicle should be conducted from an uphill, upwind, and off-angle approach
- Non-firefighter responders who use fire extinguishers should use them consistent with their training and the type of extinguisher used
    - The typical extinguisher carried in/on non-fire vehicles is only suitable for smaller vehicle fires

Lesson Objective: 8.1

- The photo on the left is located at exit ramp 36 on I-95 in Saco
- The two photos on the right are located on the Maine Turnpike



Lesson Objective: 8.1

- Incident details are as follows:
  - Volvo sedan has caught fire and is positioned along the right shoulder of the highway
  - The engine compartment is fully involved
  - The fire department engine company positions in the same lane of traffic but facing the opposing direction and obstructed by smoke from the vehicle
- Note that the radio traffic indicates that opposing traffic is stopped and that the firefighter manning the hose is concerned with the fire spreading to the adjacent tree line

Lesson Objective: 8.1

- **Video:** L8-V2_FL_Vehicle_Fire.wmv

- Explain that the explosion that occurs is the energy-absorbing bumper piston from the vehicle's front bumper
- This video underscores how critical it is to keep personnel out of the danger zone directly in front of or directly behind a burning vehicle

Lesson Objective: 8.1

- The bumper pistons shown in the previous video are mainly used on older cars, but similar pistons are still used to support hoods, hatchbacks, lift gates, and trunks
- In this example, Roseville, MN firefighters had just brought a vehicle fire under control
- Once the fire was out, firefighters opened the garage door to ensure the fire had not spread to the structure, which it had not
- Then, upon opening the vehicle's hood, the hood struts failed and shot straight into the bottom section of the open garage door where they became impaled
    - In the picture above, the garage door had been closed to better show the impaled struts
- Fortunately, no one was standing in front of the vehicle, as they could have been seriously injured

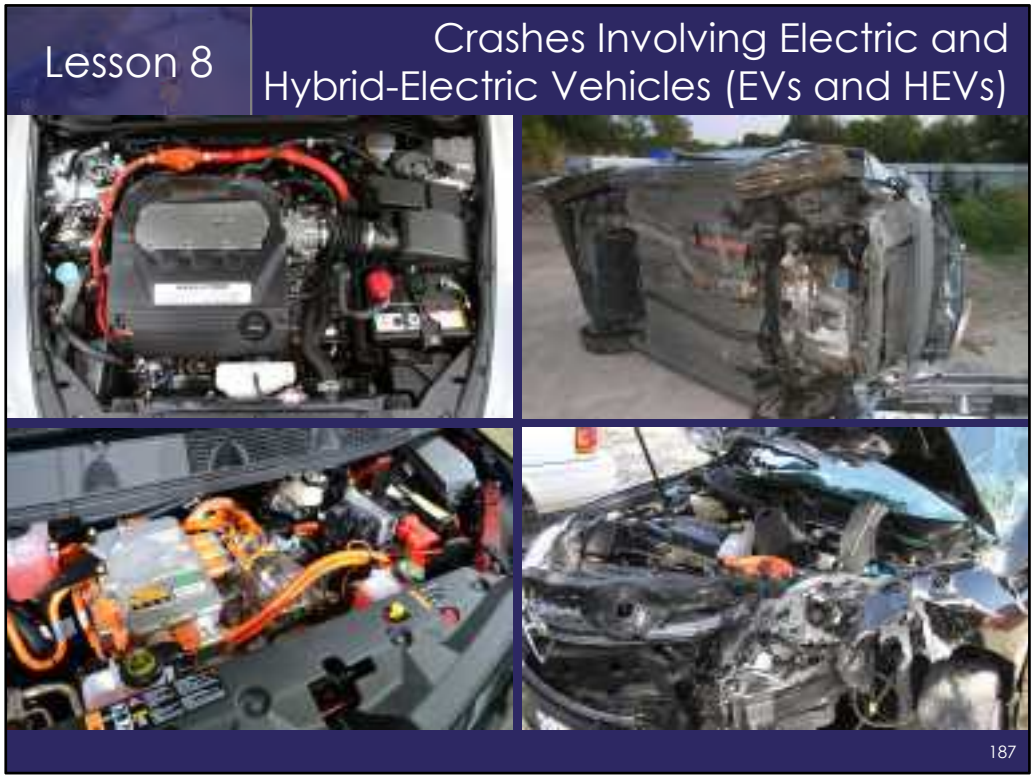
Lesson Objective: 8.1

- **Video:** L8-V3_WI_Vehicle_Fire.wmv

- Note that there is temporary traffic control in place and a blocking fire apparatus
- Highlight that closing three lanes of traffic may have been sufficient given the smoke from the fire, however when water is applied, the resulting smoke/steam creates additional hazards

- **Ask/Discuss:** What safety concerns did you identify in this video?
    - Safety implications of providing no traffic control during firefighting activities
    - Fire department pump operator exposed to upstream traffic
    - Limited sight distance due to drifting smoke
    - Individual walking on downstream side of smoke screen
    - Burning vehicle danger zone
    - Rubbernecker drivers in the opposing lanes of traffic

- It is oftentimes better to close more lanes or stop all traffic while the fire is actively being extinguished
- Note that smoke from structure, brush, and other fires adjacent to roadways can present the same smoke hazards for drivers as a vehicle fire on the roadway
- Fire and other responders must be cognizant of the impact smoke is having on adjacent roadways, continually monitor the situation, and be prepared to close roadways when conditions warrant



Lesson Objective: --

- Electric vehicles and hybrid-electric vehicles present unique challenges for traffic incident responders
- As with other special circumstances, responders should be aware of heightened hazards and restrict their activities to those to which they are trained and equipped

Lesson 8 — Interim Guidance for EVs and HEVs Equipped with High-Voltage Batteries

National Highway Traffic Safety Administration Guidance

Law Enforcement
EMS and Fire

Towing and Recovery
Storage Facilities

Vehicle Owner
General Public

Source: http://www.nhtsa.gov/ 188

Lesson Objective: --

- The National Highway Traffic Safety Administration (NHTSA) has published interim guidance for all responder disciplines when dealing with electric and hybrid-electric vehicles
- It is intended to serve as a general reference for vehicle operators and responders when confronted with a hybrid or electric plug-in disabled vehicle, crash, vehicle fire, or other incident
- Three guidance documents are available:
  - Law Enforcement/Emergency Medical Services/Fire Department
  - Towing and Recovery Operators and Vehicle Storage Facilities
  - Vehicle Owner/General Public
- Each responder should be familiar with the content associated with their discipline
- The NHTSA interim guidance documents are free and downloadable at:
  - http://www.nhtsa.gov/

Reference:

- Appendix F – Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped with High-Voltage Batteries

Lesson 8 — Hazardous Materials (Hazmat) Identification

- Placards
  - Numbered placard
  - Placard with an orange panel
  - Warning or other placard
- Shipping papers or bill of lading
- Commodity names or markings
- Labels

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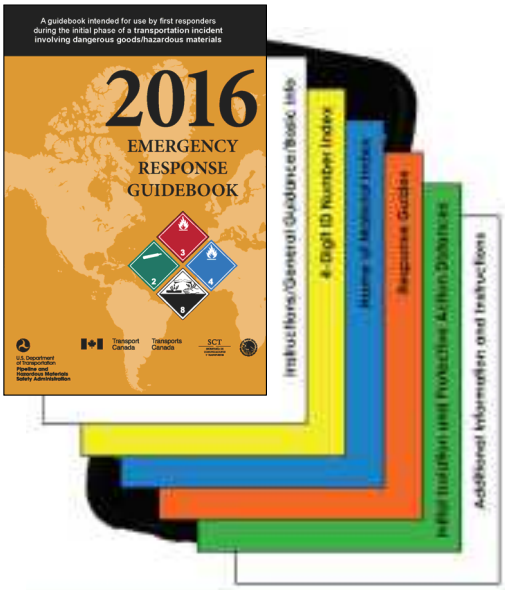
Lesson Objective: 8.2

- Recognize that most participants in this class have received hazmat training prior to this program
- 29 CFR 1910.120 is an Occupational Safety and Health Administration (OSHA) regulation that went into effect in the 1980s that requires transportation workers (which includes responders) be trained in hazmat
- The purpose of this section of Lesson 8 is simply to discuss hazmat as it relates to TIM and provide a brief refresher
- Placards are the most familiar way to identify hazardous materials that are being transported
- The 4-digit ID Number may be shown on the diamond-shaped placard or on an adjacent orange panel displayed on the ends and sides of a cargo tank, vehicle, or rail car
- Shipping papers, bill of lading, labels, names, and other markings can also help identify hazmat
- Shipping documents (papers) are synonymous and can be found as follows:
  - Road – kept in the cab of a motor vehicle
  - Rail – kept in possession of a crew member
- Shipping documents (papers) provide the vital information regarding the hazmat/dangerous goods needed to initiate protective actions
- It is recommended that placard information be confirmed with the driver and/or the bill of lading (if safely reachable)

Lesson 8

Emergency Response Guidebook (ERG)

- Instructions/General Guidance/Basic Info
- 4-Digit ID Number Index
- Name of Material Index
- Response Guides
- Initial Isolation and Protective Action Distances
- Additional Information and Instructions



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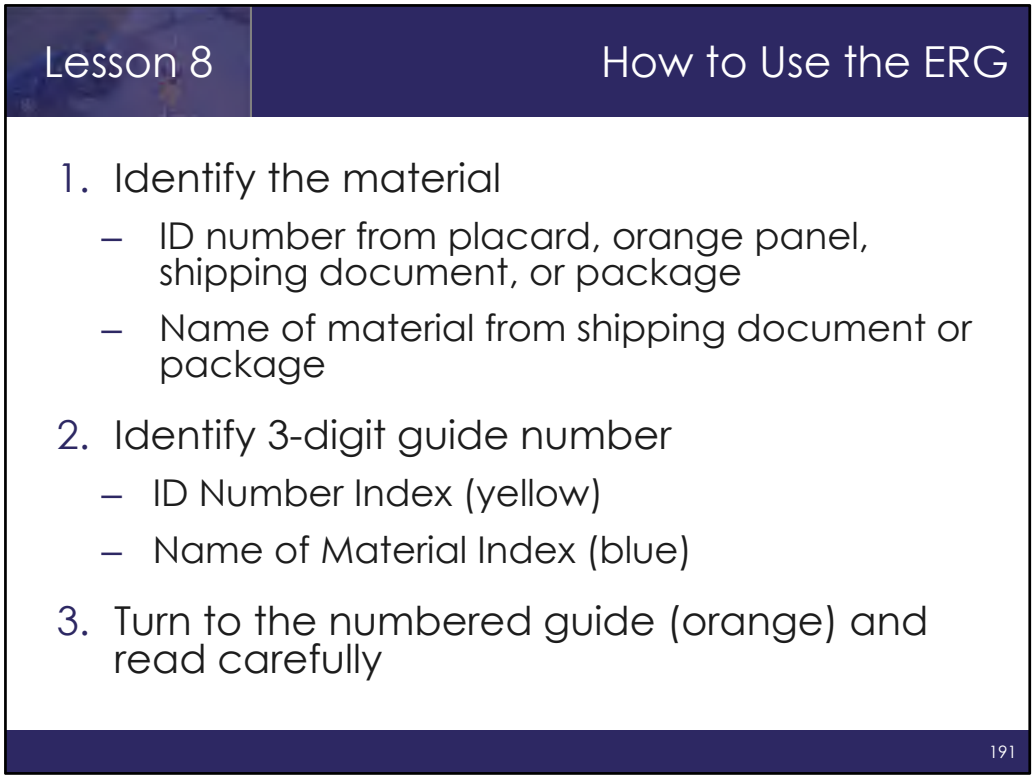
Lesson Objective: 8.2

- **Animation:** Click once to make phone with the ERG app appear

- The Emergency Response Guidebook (ERG) is an excellent resource for all incident responders
- The ERG is divided into sections, based on the color of the pages
  - White pages in the front of the book
    - Instructions / General Guidance / Basic Info
  - Yellow pages
    - 4-Digit ID Number
  - Blue pages
    - Name - Alphabetical
  - Orange pages
    - Actual response guides (more than 170)
    - In the event of an unknown material, Guide #111 should be followed
  - Green pages
    - Suggests distances useful to protect people from vapors resulting from spills involving dangerous goods that are considered toxic by inhalation
  - White pages in the back of the book
    - Additional instructions and information on protective clothing and equipment
- Electronic versions of the ERG, computer software, and mobile applications are also available **[Click]**



Lesson Objective: 8.2

- Step One: Identify the material and use any of the following:
  - Identification number (4-digit ID) from a:
    - Placard
    - Orange panel
    - Shipping document or package
  - Name of the material from a:
    - Shipping document or package
- Step Two: Identify 3-digit guide number, use:
  - ID Number Index in yellow-bordered pages or
  - Name of Material Index in blue-bordered pages
  - Guide number supplemented with the letter (P) indicates that the material may undergo violent polymerization
  - Index entries highlighted in green are a toxic inhalation hazard (TIH) material
  - If a reference to a guide cannot be found and this incident is believed to involve dangerous goods:
    - Use Guide 111, until additional information becomes available
    - Use Guide 112, Explosives (other than 1.4 and 1.6)
    - Use Guide 114, Explosives (1.4 and 1.6)
- Step Three: Turn to the numbered guide (the orange-bordered pages) READ CAREFULLY

Lesson 8 Hazmat Response

- Agencies should be capable of the following actions when hazardous materials are involved in a traffic incident:
  - Identify reportable quantities
  - Determine what response is required
  - Understand the capabilities of local responders
- Appropriate policies should be developed and put in place in advance of a hazmat incident

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Lesson Objective: --

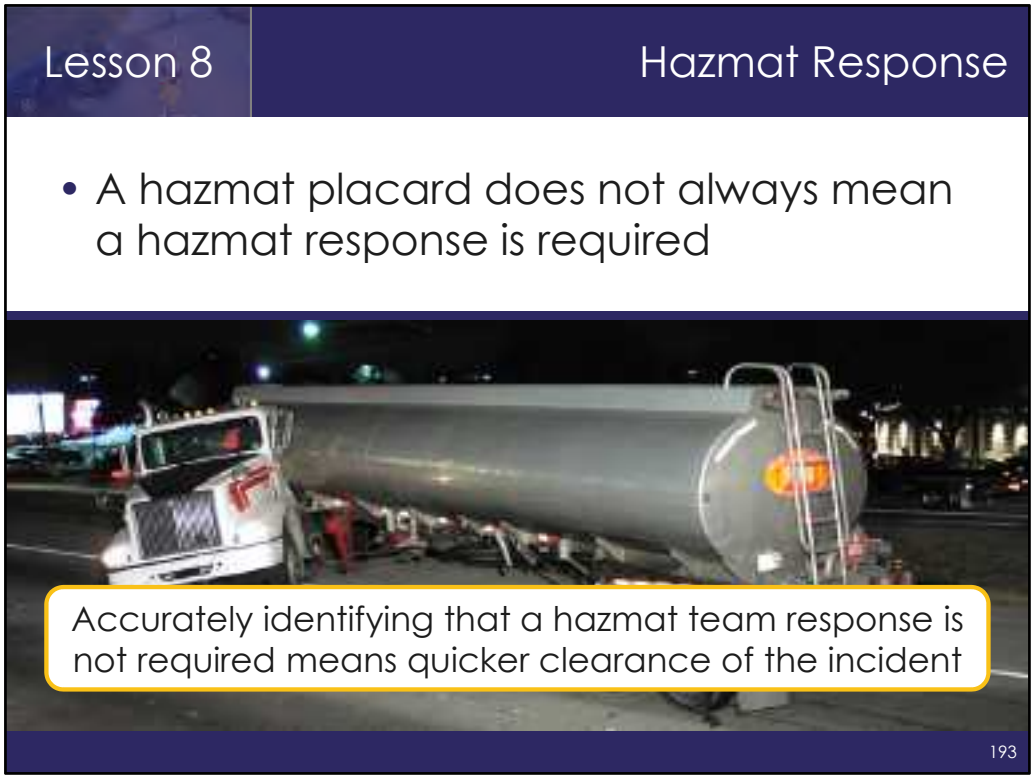
Lesson 8
Trainer Guidance

Local Customization

Hazmat Policies and Procedures

- Insert your state or jurisdiction's policies and procedures related to:
  - Hazmat response
  - Reportable quantities
    - Each state defines reportable quantities for hazardous materials differently so ensure that participants are fully aware of your state's reportable quantity requirements

Lesson Objective: --



Lesson Objective: 8.3

- **Animation:** Click forward to reveal bottom text box

- Not all incidents involving the transportation of hazardous materials are hazmat incidents
- For example, although this vehicle has a hazmat placard, if there is no damage to the tank and nothing is leaking, it is unlikely that a hazmat response would be required **[Click]**

Lesson 8 Spill Response for Vehicle Fluids

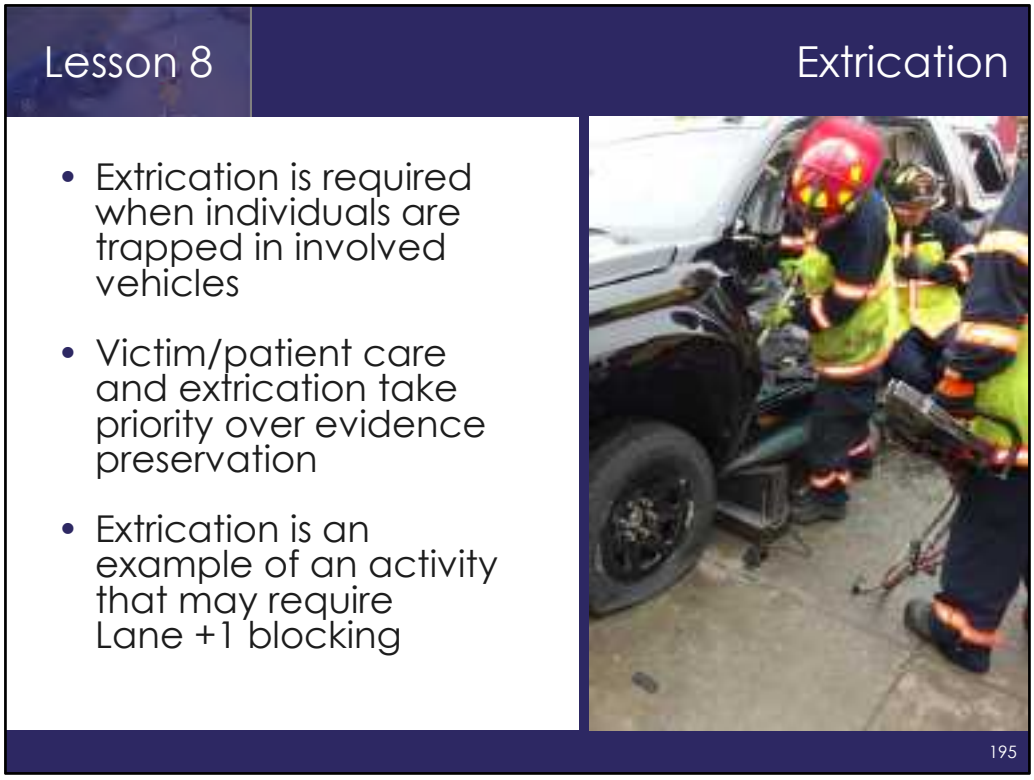
For vehicle fluid spills:

1. Stop leaking material at the source
2. Contain and limit the spill from spreading
3. Apply available absorbents
4. Remove material from travel lanes
5. Gradually restore traffic flow

194

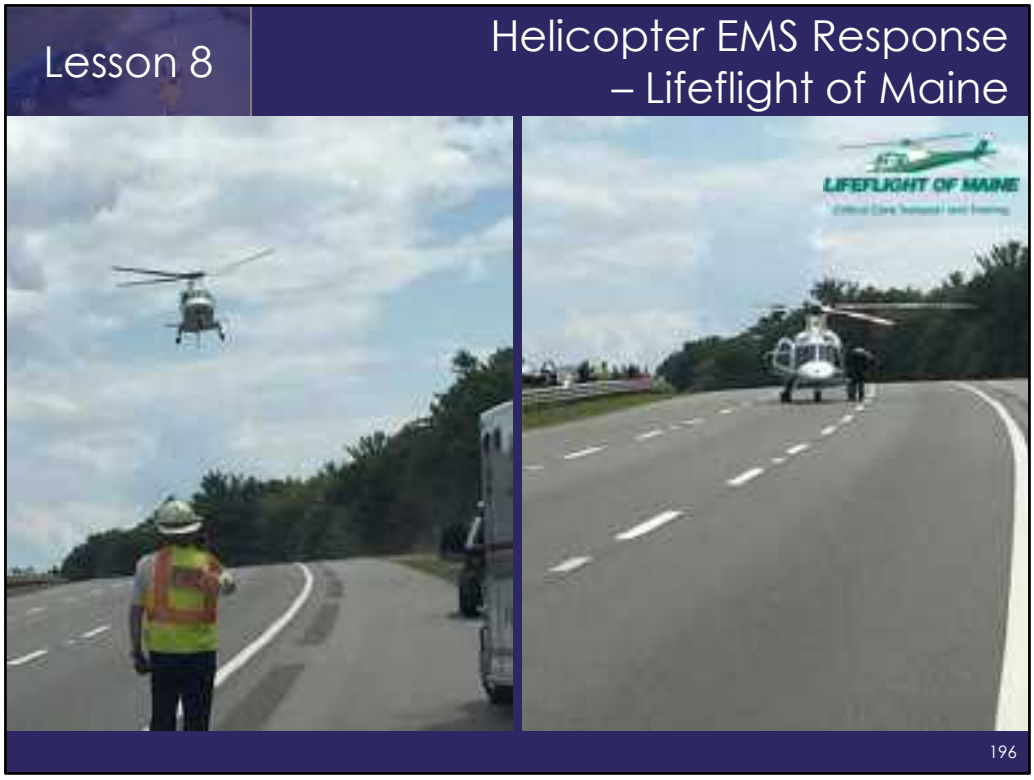
Lesson Objective: 8.3

- Common small vehicle fluid spills can be mitigated following these steps as long as responders are following their state's related policies and procedures
- It is important to make every effort to stop the spill from reaching any type of waterway, including catch basins, sewers, storm drains, etc.
- Many tow companies carry absorbent and other equipment that may assist with spill mitigation
    - It is recommended that you maintain an understanding of the capabilities of the tow providers in your area



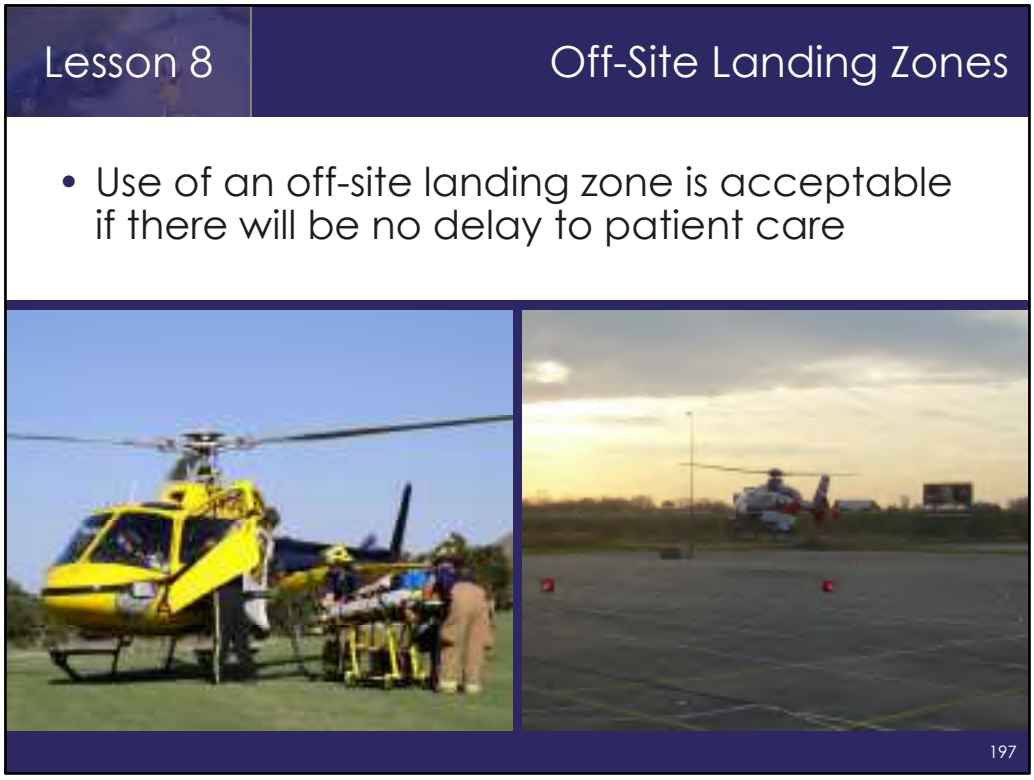
Lesson Objective: --

- The need to extricate trapped victims is another special circumstance
- It is preferable that law enforcement be able to review the vehicles before extrication activities begin
    - However, this may not be practical or possible due to patient care and life safety priorities



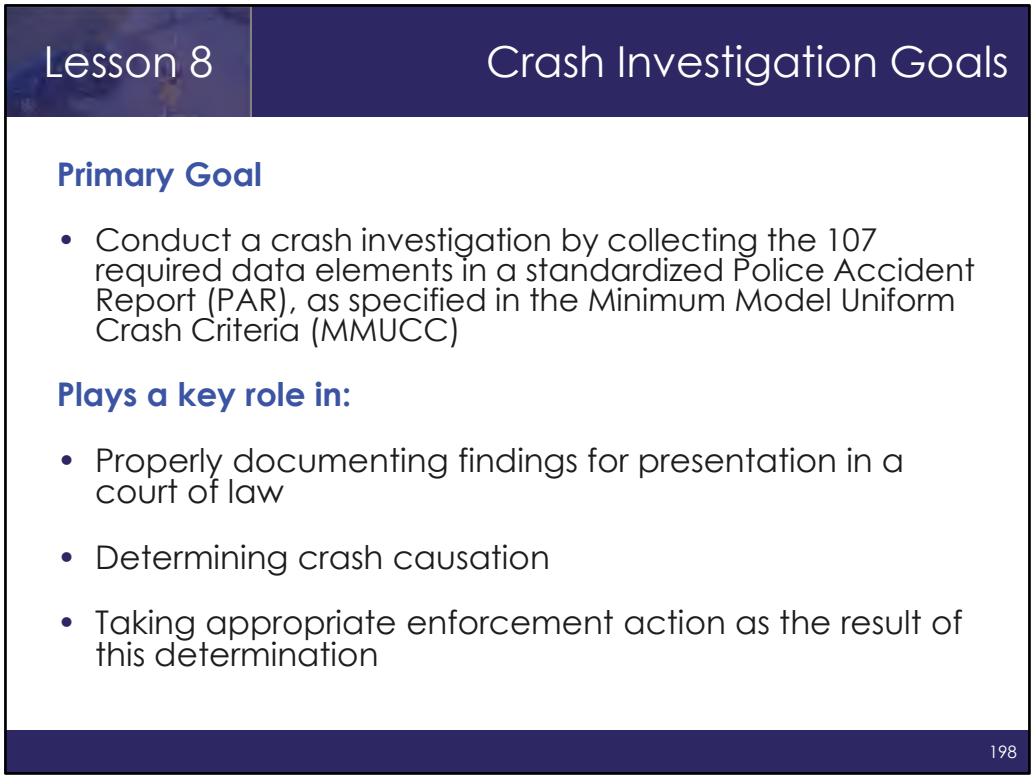
Lesson Objective: --

- In cases where incident victims need urgent or time-sensitive treatment, medical helicopters are typically utilized
- When a medical helicopter utilizes the highway as a landing zone, traffic flow is restricted, which may increase congestion



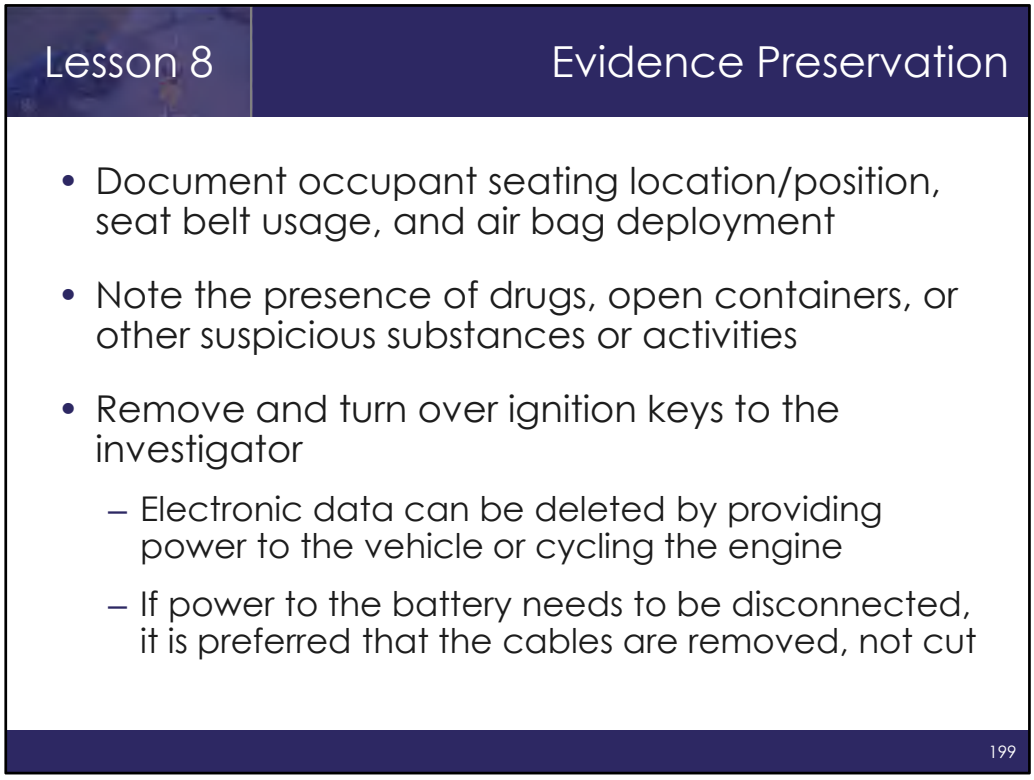
Lesson Objective: --

- Emphasize that transport to an off-site landing zone may be preferable to improve responder safety and facilitate quick clearance
- Potential off-site landing zones include:
  - Local airports/airfields
  - Parking lots
  - Large, flat fields
- Consider identifying and recording the Global Positioning System (GPS) coordinates of preferred off-site landing zones
- Consideration does need to be given to the logistics of using an off-site landing zone
  - Need for resources to protect both the initial scene and the off-site landing zone
  - Transport of patients to the off-roadway, alternate landing zone location



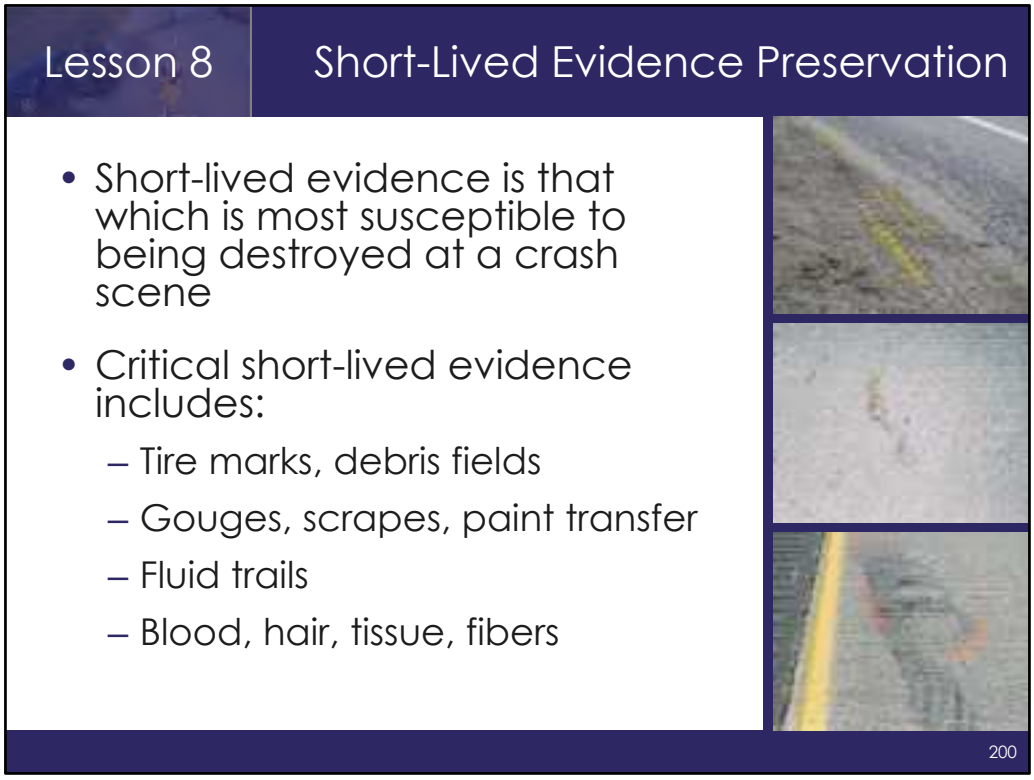
Lesson Objective: 8.4

- The type and complexity of the incident plays a key role in the level of crash investigation that will be necessary
- Review the purposes of a crash investigation
  - Collect data that ultimately helps understand when, where, and why crashes occur
  - Identifies who is at fault for vehicle repairs and other compensation
  - Ensures that individuals who committed a crime are brought to justice (driving under the influence (DUI), manslaughter, vehicular homicide, leaving the scene, etc.)
- It is the responsibility of all incident responders to ensure that the incident scene is preserved
  - Refrain from removing, moving, or eradicating physical evidence until approved by law enforcement personnel
  - Understand the necessity for law enforcement personnel to collect physical evidence from the roadway and any involved vehicles
  - Understand the value of not moving vehicles or other physical evidence until told to do so by law enforcement personnel



Lesson Objective: 8.4

- Also note that within the vehicle there may be evidence such as blood or DNA
  - Remember you are leaving DNA behind on anything you touch
  - Need to be aware of cross-contamination
  - If no one is in the vehicle, there is no reason for responders to be in the vehicle
- Under no circumstances should the vehicle itself be used as a garbage can



Lesson Objective: 8.4

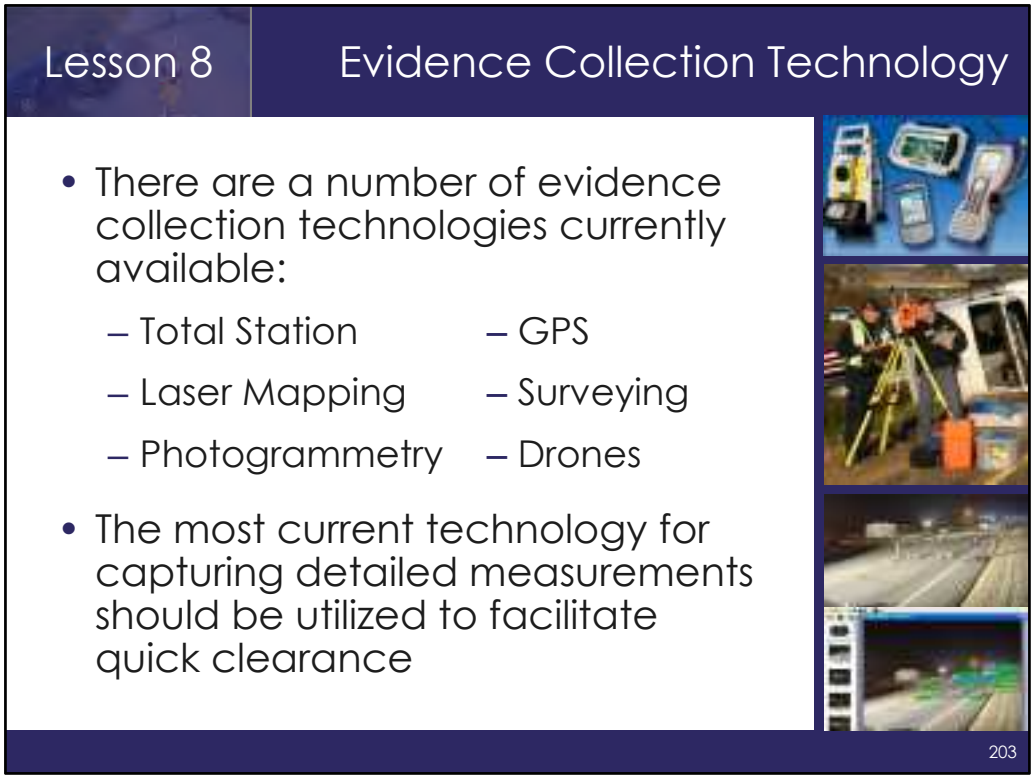
- All responders should be aware and conscious of short-lived evidence
- Critical short-lived evidence can disappear when walked on by responders, driven over, flushed away with water, covered with oil-absorb, unintentionally swept away with a broom, etc.

Lesson Objective: 8.4

- Take only those actions needed to complete your own area of responsibility with minimal disturbance of the scene unless authorized or assigned
- Reinforce that all debris is evidence until proven otherwise by law enforcement personnel
    - When in doubt about something… ask!
- If important scene investigation evidence needs to be moved, that item should be photographed and its location marked
    - Who marked and photographed the evidence should be documented
    - Use paint or other semi-permanent marking

Lesson Objective: 8.4

- It is critical to notify the Medical Examiner/Coroner as early as possible to minimize response times
    - They are typically driving normal vehicles and can have a difficult time navigating through the traffic queue to reach the incident
    - Alternatively, in more rural areas, they may have to travel a significant distance to reach the incident
- Knowing the laws in the state that govern declaring death and removing fatally injured victims is critical
- Some states have memorandums of understanding that allow fatalities to be documented by the local law enforcement agency and removed from the scene without waiting for the Medical Examiner
- In some jurisdictions, the Medical Examiner will prioritize traffic fatalities above other deaths, like one in a home, to promote safe, quick clearance



Lesson Objective: 8.4

- Measuring a crash scene is often a time consuming proposition that involves several responders
- Technology can be used to measure and document a crash scene for later diagramming
  - Laser mapping systems
  - Photogrammetry
- Evidence collection technology is constantly changing and evolving
- Unmanned aerial vehicles (UAVs), which is the technical term for drones, is an emerging evidence collection technology
- In many places, transportation agencies assist law enforcement agencies in purchasing equipment in order to promote safe, quick clearance

Lesson Objective: --

- It is important that preplanning occur for incidents involving unique locations and special roadway characteristics since these incidents may impede or complicate incident response
- Examples include:
  - Bridges
  - Tunnels
  - Elevated roadways
  - Tollbooths
- Unique locations such as these can present challenges for later-arriving responders still enroute to the scene
- Directions for response or approaches to the scene must be communicated to other responders
- Providing recommended approach strategies can minimize response times and improve safety for all personnel

Lesson Objective: --

- Responder considerations for work zone TIM include:
  - Participate in Transportation Management Plan (TMP) development and pre-construction planning activities
  - Identify potential threats to responder safety
  - Develop a plan of action for work zone TIM
  - Stay informed about lane/ramp closures and alternate ways to access the work zone
  - Maintain contact information for both the responsible transportation agency and the contractor
  - Notify the transportation agency/contractor if you observe:
    - Situations that encourage illegal and/or risky road user behavior
    - Missing traffic control devices
    - Improper work practices
- Strategies to facilitate work zone response include:
  - Requesting gates in temporary barriers, gated "back-door" access to work sites, temporary access from overpasses or side roads, and emergency response vehicles suitable for off-road driving
  - Identifying locations for emergency pull-off or refuge sites for work zones with long stretches of limited or no shoulder
  - Utilizing existing temporary traffic control devices and other contractor resources

Lesson 8 Median Cable Barrier Systems

- If a crash involves a high-tension median cable barrier system:
  - Defer to the DOT when possible
  - It is preferred that vehicles be removed in the direction they entered the system
  - Cutting a cable under tension is a last resort and only personnel with training and experience should attempt
  - Everyone else should remain a safe distance away from the area

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Lesson Objective: --

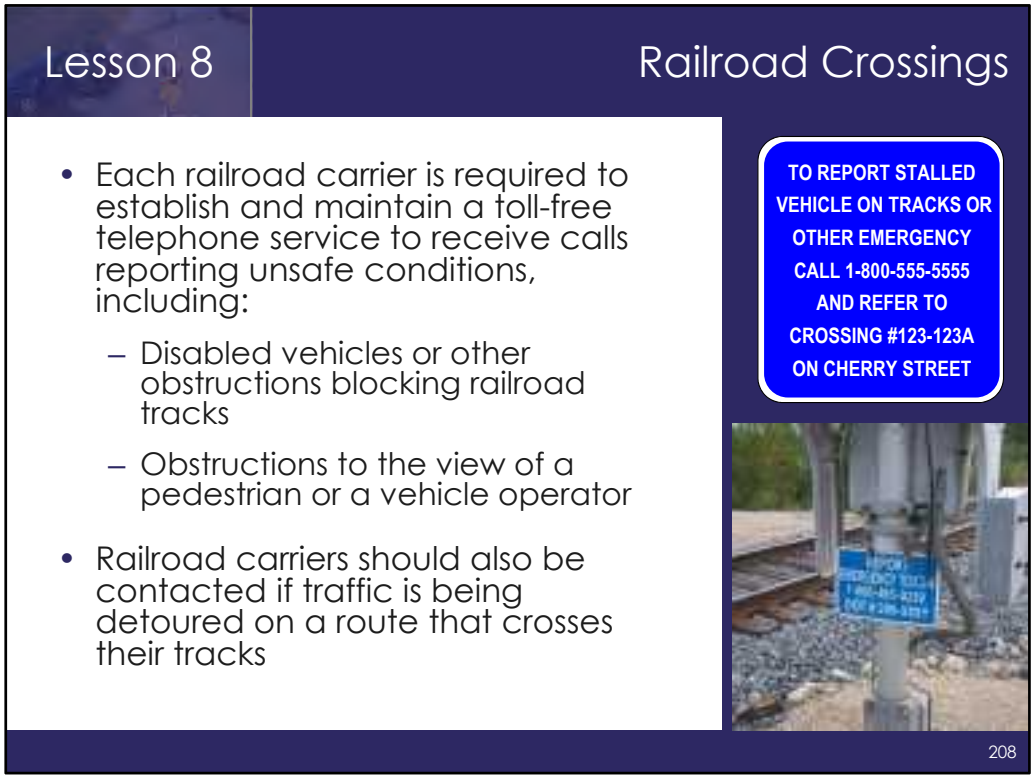
- **Customization:** Insert additional information specific to the type of high-tension median cable system that is being used in the area
  - The DOT, or other transportation agency that is responsible for the roadway with the cable barriers, will typically be able to supply additional information

- High-tension median cable systems are a cost-effective way to reduce crossover crashes and improve safety
- Cable barriers are 95% effective in reducing serious injuries
- Cable barriers should only be cut by properly trained responders
  - Cuts should be made away from the incident scene
- A cut barrier system does not provide safety until repaired, which could create potential liability concerns
  - It is critical that the maintaining agency is made aware of the cut

Note to trainer
The video on the next slide in the presentation is a demonstration of how to release tention on a Median cable barrier system. This should always be left to the experts at MaineDOT.

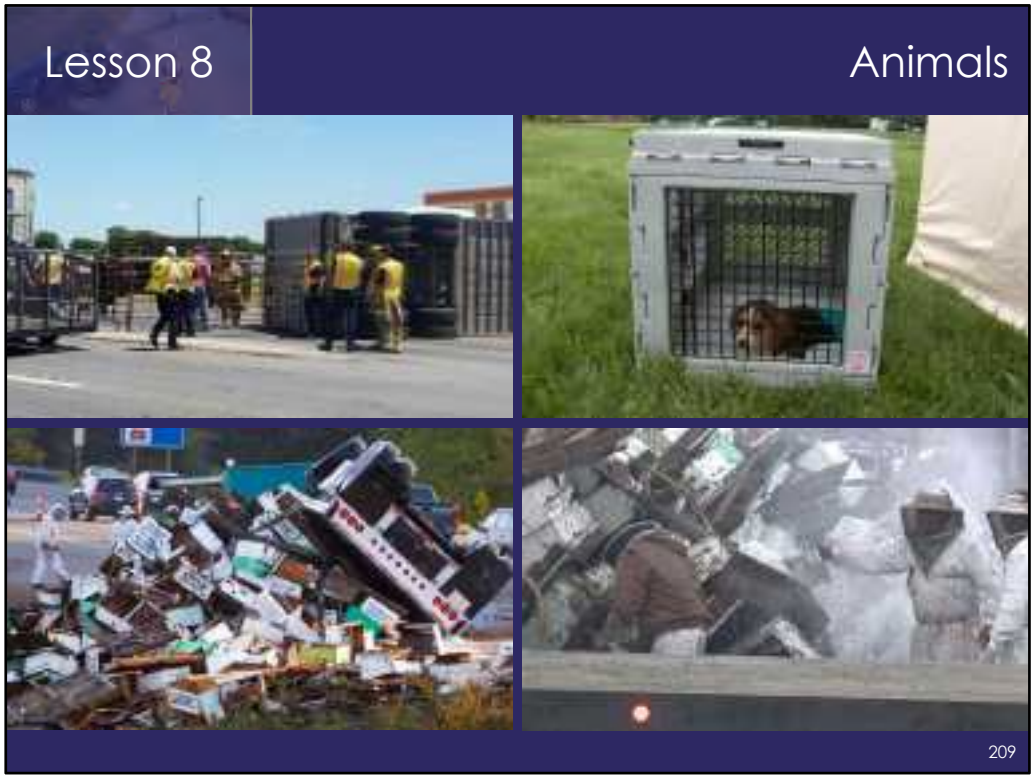
Lesson Objective: --

- According to the Transportation Research Board, more than 1,000 motorists are killed each year in crashes involving utility poles
- When responding to crashes involving utility poles, address all potential hazards before reacting to the incident itself
- Assume downed wires are energized, and be aware they may energize other objects in contact like fences, guard rails, and other types of cables/wires – even bodies
- Establish a safety zone and notify electric authority immediately – stay back a minimum of 10 feet
- Only operate within the scope of your training and equipment
- Public safety equipment, including firefighter boots, wood or fiberglass poles, and other items are not designed for electric utility work



Lesson Objective: --

- Each railroad carrier is required to establish and maintain a toll-free telephone service for right-of-ways over which it dispatches trains through highway-rail grade crossings and pathway grade crossings
- Upon receiving report of signal malfunction, disabled vehicle, or other obstruction, the railroad must:
    - Immediately contact trains
    - Contact appropriate law enforcement agency so they can assist as necessary
    - Investigate the report
    - Correct the malfunction or unsafe condition

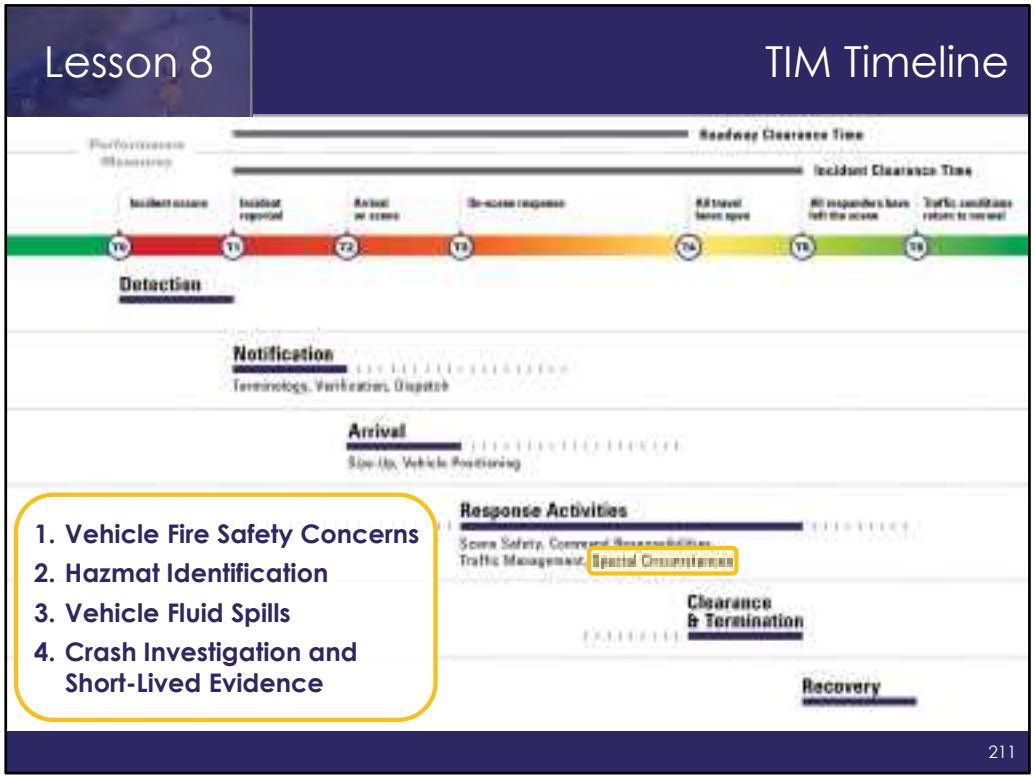


Lesson Objective: --

- Work with local animal-related agencies to develop a response plan and resource list for incidents involving animals
- A response plan needs to include options for containment, triage, transport, and housing of all types of animals, including livestock and companion animals
- Resource lists should include Animal Control and/or humane society personnel, veterinarians, and livestock producers who are able to respond 24/7

Lesson Objective: --

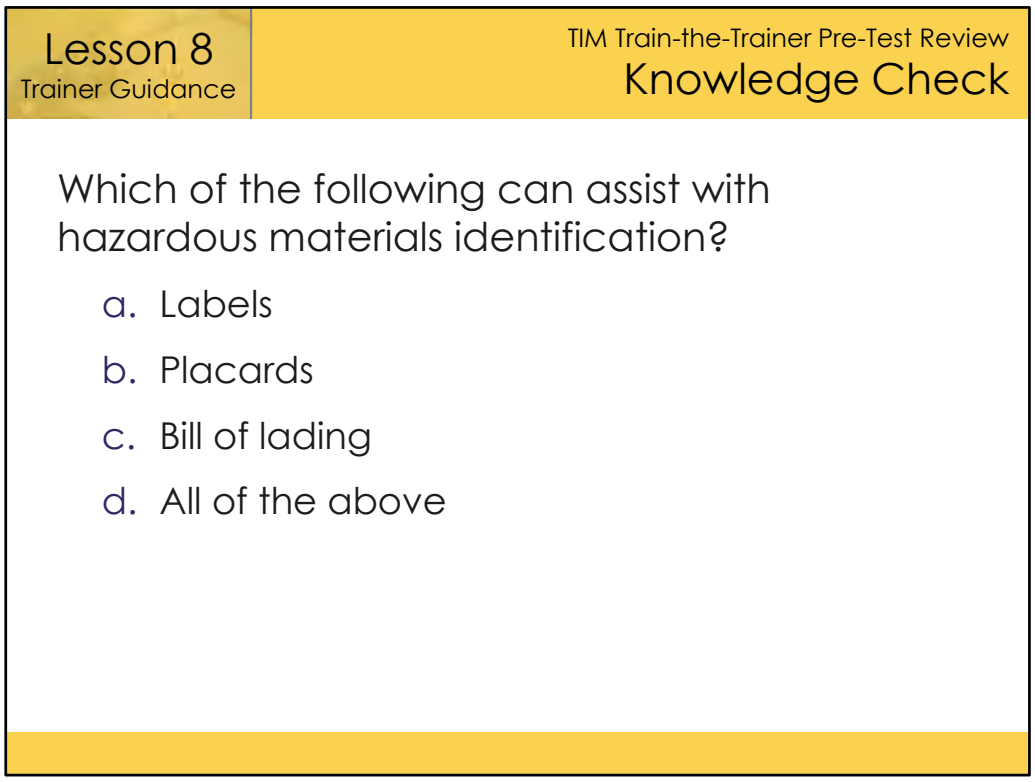
- The primary concern for weather-related situations is the safety of responders and the traveling public
- Visibility, sight distance, and stopping distance are all important factors to keep in mind at an incident
- Responders are typically accustomed to the types of severe weather that occur in their area and should follow agency/local protocol
- Severe weather situations may result in the activation of a state or local Emergency Operations Center (EOC)
    - EOCs assist with multi-agency coordination of information and resources to support incident management activities, including incident or natural disaster responses and short-term recovery efforts
    - On their own, traffic incidents typically don't require an EOC activation



TIM Timeline	Lesson Objectives Review

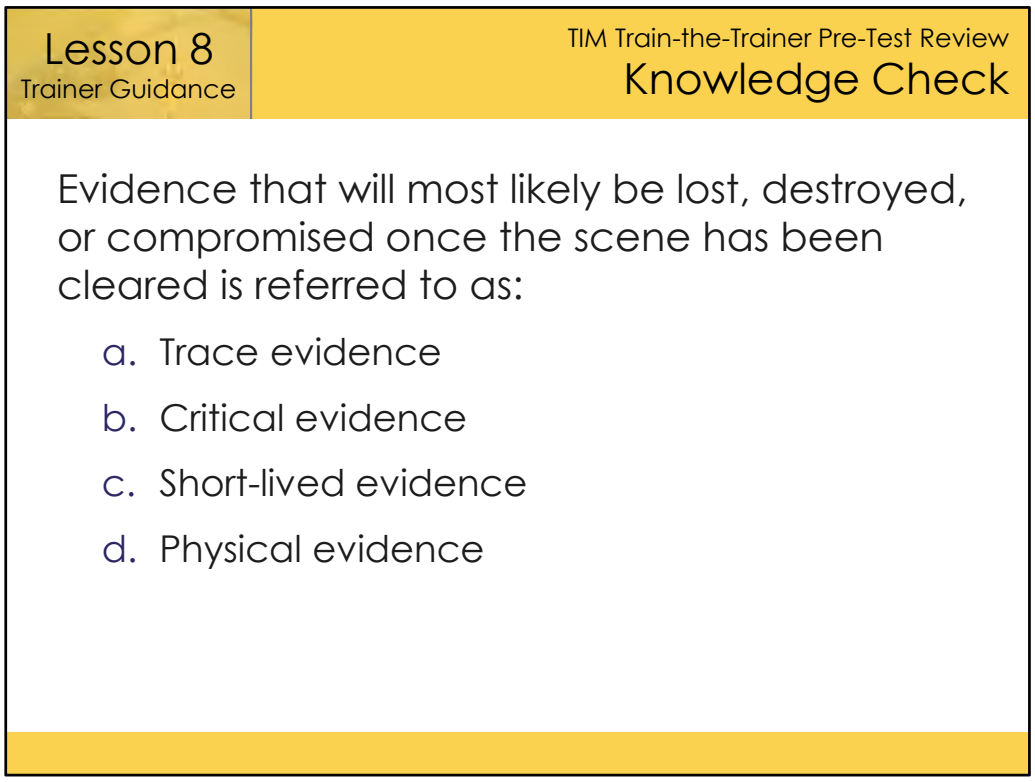
- **Animation:** Click forward to make the small yellow box appear and then click again to bring up the lesson objectives review

- **Ask/Discuss:** How can special circumstances impact the TIM timeline?



Knowledge Check	Correct Answer: d

- **Answer Reference:** Slide 189



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 200

Lesson 9: Clearance and Termination

212

Lesson 9 — Lesson Objectives

At the conclusion of this lesson, participants will be able to:

1. Describe **quick clearance strategies** for both minor incidents and incidents that involve tractor trailers and/or spilled cargo
2. List the **type of information** that needs to be provided to **towing and recovery** to facilitate their response
3. Describe the importance of **performing response tasks concurrently** as it relates to safe, quick clearance
4. Describe the major activities that take place during **termination** and identify safety related considerations for **scene breakdown**

213

Lesson 9 — Quick Clearance Decisions

- If the vehicle is still functional, have the motorist move it out of the roadway
  - Push, pull, drag or drive
- If authority removal legislation is in place, determine if vehicle can be moved out of travel lanes
- If the vehicle is not functional, an appropriate-sized tow truck must be called

214

Lesson Objective: 9.1

- Discuss the key decisions that will need to be made at an incident that have a direct impact on getting lanes open as soon as possible
- Depending on the type of incident, if law enforcement is not yet on scene, other responders may want to consider marking the final resting spot of vehicles prior to moving them

Lesson 9 Towing and Recovery

- Tow operators depend on getting timely, accurate information from those on the scene

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Lesson Objective: 9.2

- During incident response, tow operators play an invaluable role in promoting quick clearance by removing damaged vehicles
- It is important to request towing and recovery services as early as possible to facilitate timely response
    - This is especially critical in rural areas where response times may already be extended
- Clearance goals for tow operators include:
    - Departing the scene as quickly as possible
    - Transporting occupants from towed vehicles to a safe location away from the incident
    - Handling financial negotiations off-site

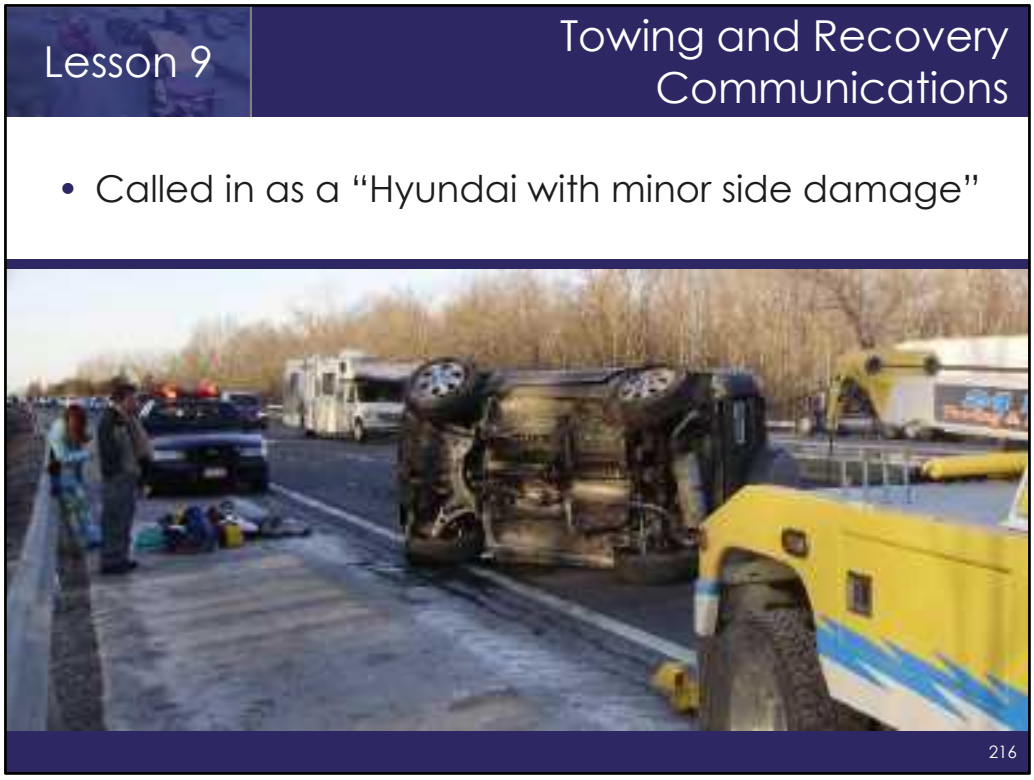
Lesson 9
Trainer Guidance

Presentation Format

Towing/Recovery Communications

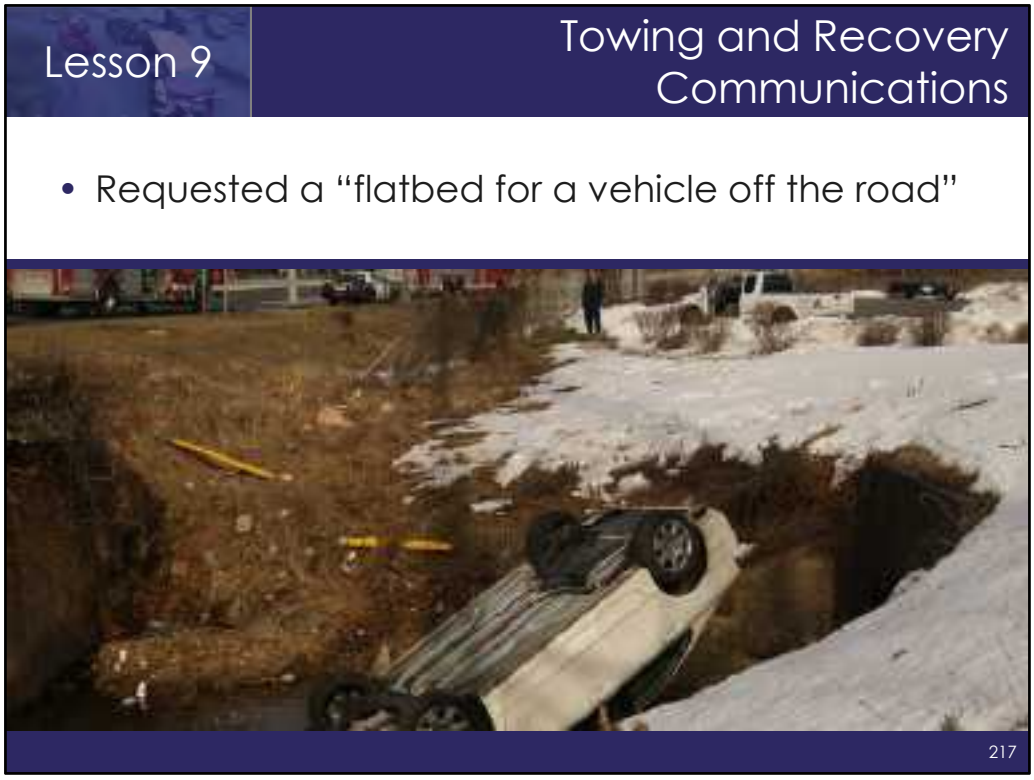
- The following three slides start with the description provided to a towing and recovery provider by the law enforcement agency requesting a tow
- Click forward to reveal the picture of the actual incident
- These slides illustrate the need to provide complete and accurate incident details when requesting towing and recovery services

Lesson Objective: 9.2



Lesson Objective: 9.2

- **Animation:** Click forward to make picture appear
- Read description and then reveal picture **[Click]**
- **Ask/Discuss:** Was the description of the incident provided accurate enough to ensure that the tow company responded with the appropriate equipment?



Lesson Objective: 9.2

- **Animation:** Click forward to make picture appear
- Read description and then reveal picture **[Click]**
- **Ask/Discuss:** Was the description of the incident provided accurate enough to ensure that the tow company responded with the appropriate equipment?

Lesson Objective: 9.2

- **Animation:** Click forward to make picture appear
- Read description and then reveal picture **[Click]**
- **Ask/Discuss:** Was the description of the incident provided accurate enough to ensure that the tow company responded with the appropriate equipment?

Lesson 9 TRAA Vehicle Identification Guide

- Year, make, and model of vehicle
- DOT classification
- Location and scene access
- Reason for tow
- Additional vehicle or crash details

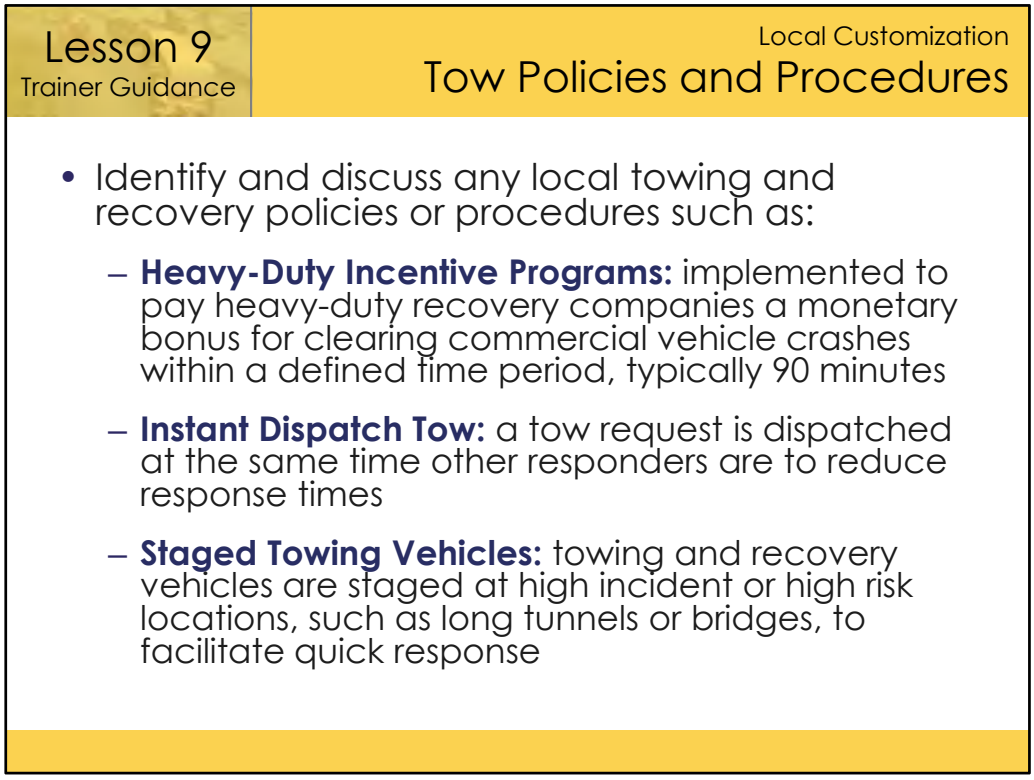
219

Lesson Objective: 9.2

- Responding with the appropriate-sized tow vehicle requires an accurate description of the vehicles involved in the incident, their location, and the reason for the tow
- Law enforcement and other responders must resist the temptation to tell towers which tow truck to bring
    - An analogy would be law enforcement telling fire to bring a ladder truck, a pumper, or a tanker to the scene
- To assist non-towing responders, the Towing and Recovery Association of America (TRAA) has developed a Vehicle Identification Guide
- The guide:
    - Groups common vehicle silhouettes into DOT classifications 1 through 8 based on gross vehicle weight (GVW)
    - Lists information that towing dispatchers require to dispatch the appropriate towing vehicle

Reference:

- Appendix G – Towing and Recovery Association of America Vehicle Identification Guide



Lesson Objective: 9.2

- In many locations, transportation and law enforcement agencies have created towing programs that go beyond the traditional contract or rotation system
    - These programs typically include both equipment and training requirements
- These specialized programs expedite towing response to shorten the TIM timeline
- If one or more of these tow policies/procedures are used where the course is conducted, it is recommended that a slide to describe the program be inserted
- Information about existing heavy-duty incentive programs can be found on the websites listed below:
    - Georgia's Towing and Recovery Incentive Program (TRIP)
        - http://www.timetaskforce.com/
    - Florida's Rapid Incident Scene Clearance (RISC) Program
        - http://sunguide.info/index.php

Lesson 9 — Towing and Recovery Partnerships and Joint Training

- The towing industry is supportive of realistic training standards and supports several training programs nationwide
- Joint training provides an opportunity for other responders to better understand the capabilities of their towing and recovery partners

220

Lesson Objective: 9.2

- While joint training that focuses on recovery capabilities is very important, towing and recovery professionals should be part of general TIM training as well
- **Ask/Discuss:** Can you provide examples of when you trained with your partner agencies?
  - If none, ask where they might be able to do so in the future

Lesson 9 — Cargo Removal

- Typically the trucking company and/or insurance provider must be contacted
  - It is often requested that cargo be salvaged, but that can mean significant traffic delays
- An aggressive method that allows for responder safety and quick clearance should be used
  - Supported by authority removal and hold harmless legislation in some states

221

Lesson Objective: 9.1

- How cargo is handled depends on local or regional procedures
- Allowing for an owner's request tow/recovery may delay clearance
- Consider pushing spilled cargo to the shoulder to open travel lanes more quickly

- **Ask/Discuss:** Has there been an incident recently where cargo was spilled on the roadway, and, if so, how was it handled?

Lesson Objective: 9.1

- Provide the following incident details:
  - The overturned 18-wheeler's cargo consisted of 38,000 lbs. of empty wine bottles
  - The impending rush hour makes clearing this interchange ramp a high priority
  - Since the structural integrity of the trailer was compromised, the load had to be unloaded manually

- **Ask/Discuss:** What strategies could be employed for clearing this incident?

Lesson Objective: 9.1

- **Ask/Discuss:** What concerns might responder disciplines have for the chosen course of action?
  - Transportation – roadway damage
  - Fire – rupture of fuel tanks, sparks

- **Ask/Discuss:** What type of command structure would likely work best for decision-making at this event?
  - Unified Command
  - Towing and recovery professionals must be involved in the discussion, and consideration should be given to the time it will take to recover versus the time it will take to relocate and then recover

- The time period from the start of the incident to when all lanes could be opened was 2 hours, 13 minutes
- The actual removal time was 37 minutes since two 50 ton rotators were able to relocate the wreckage off the roadway
- Once the 18-wheeler was relocated to the shoulder, the trailer could be unloaded which took 4 hours, 30 minutes making the entire incident duration 7 hours, 9 minutes
- The estimated lane blockage time saved was between 4.5 and 5 hours
- Operations like this need to be done with care to ensure that no significant damage is done to the roadway surface

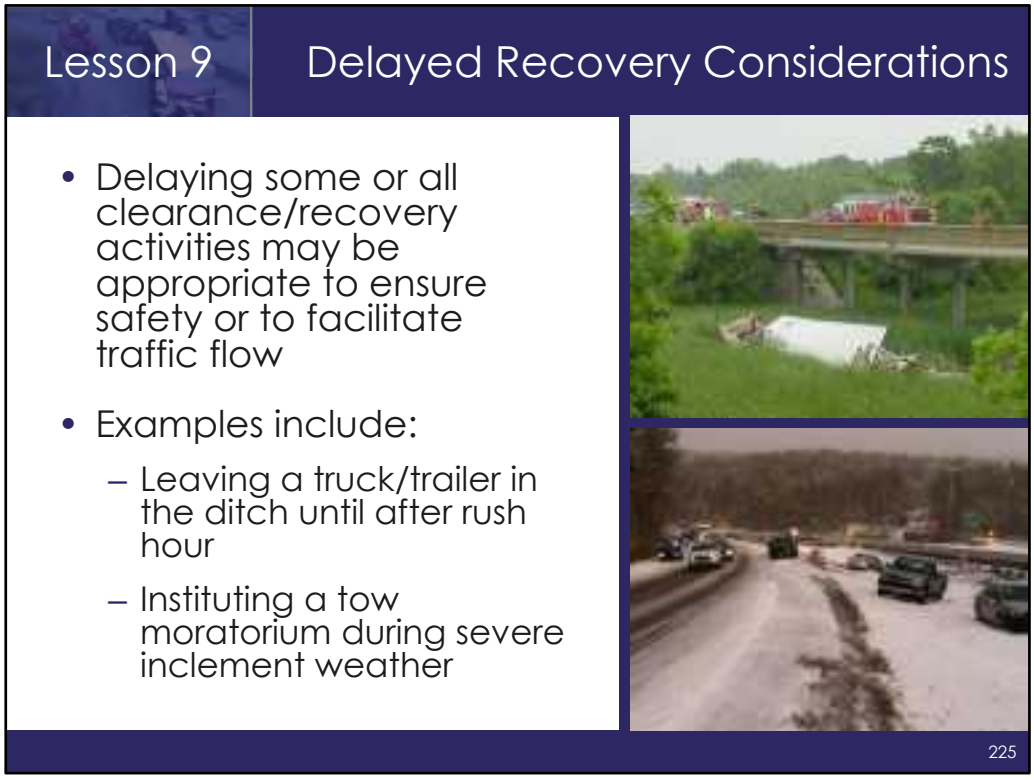
Lesson 9

Off-Site Extrication – Incident Cleared Almost 8 Hours Sooner

224

Lesson Objective: 9.1

- In September 2005 during evacuations from Houston, TX before Hurricane Rita, a 54-passenger motor coach transporting 44 assisted living residents plus nursing staff to Dallas, TX, became engulfed in flames while traveling northbound on I-45, close to Wilmer, TX
- Despite attempts to evacuate the passengers from the coach, many of whom were non-ambulatory or had cognitive impairments, 23 passengers were fatally injured
- The decision to clear the incident and have the coroners perform their work at an off-highway location meant that the roadway was open 8 hours sooner than it otherwise would have been



Lesson Objective: 9.1

- In some cases, a course of action might be to either move vehicles off the road, or leave vehicles that are already off the roadway, and perform recovery activities at a later time
- The decision to delay recovery should be made by the Incident Commander or as part of Unified Command
- Bear in mind that the distraction and hazard created by not clearing an incident may also contribute to delay and/or the potential for secondary crashes
- It is important to consider the following:
    - Where the incident vehicles/debris will be left with respect to the traveled way and/or clear zone
        - The clear zone is used to designate the unobstructed, relatively flat area provided beyond the edge of the traveled way for the recovery of errant vehicles
        - Simply stated, the closer the vehicle is to the edge of traveled way, the greater the safety hazard
    - The amount of time that the incident vehicles/debris is anticipated to remain at the scene
    - Marking the vehicles to reduce the number of calls to a dispatch center
        - Consider using caution tape to border the incident debris to mark it

Lesson 9 Debris Removal

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Lesson Objective: 9.1

- There is often a large amount of debris created by vehicle crashes

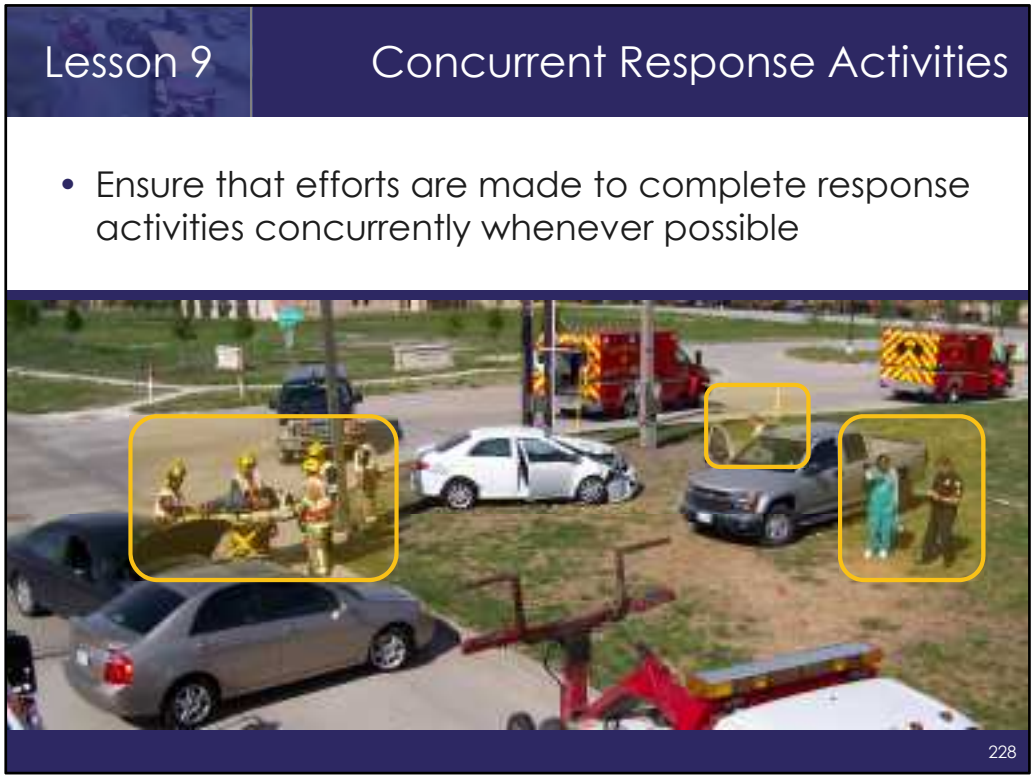
Lesson 9 Debris Removal

- Work together to clear the debris – the sooner it's done, the sooner everyone gets to leave
- In many states, towing and recovery service providers are responsible for the removal of debris
- In the interest of safe, quick clearance and responder safety, other responders can assist too

227

Lesson Objective: 9.1

- Reiterate the importance of always checking with law enforcement or the investigating agency prior to initiating debris removal/clean-up
- Safety Service Patrol operators typically assist with debris removal as well



Lesson Objective: 9.3

- **Animation:** Click forward three times to make each yellow box appear
- Concurrent activities at this scene include:
  - Assisting injured motorist **[Click 1]**
  - Preparing vehicles for removal **[Click 2]**
  - Gathering witness statements **[Click 3]**

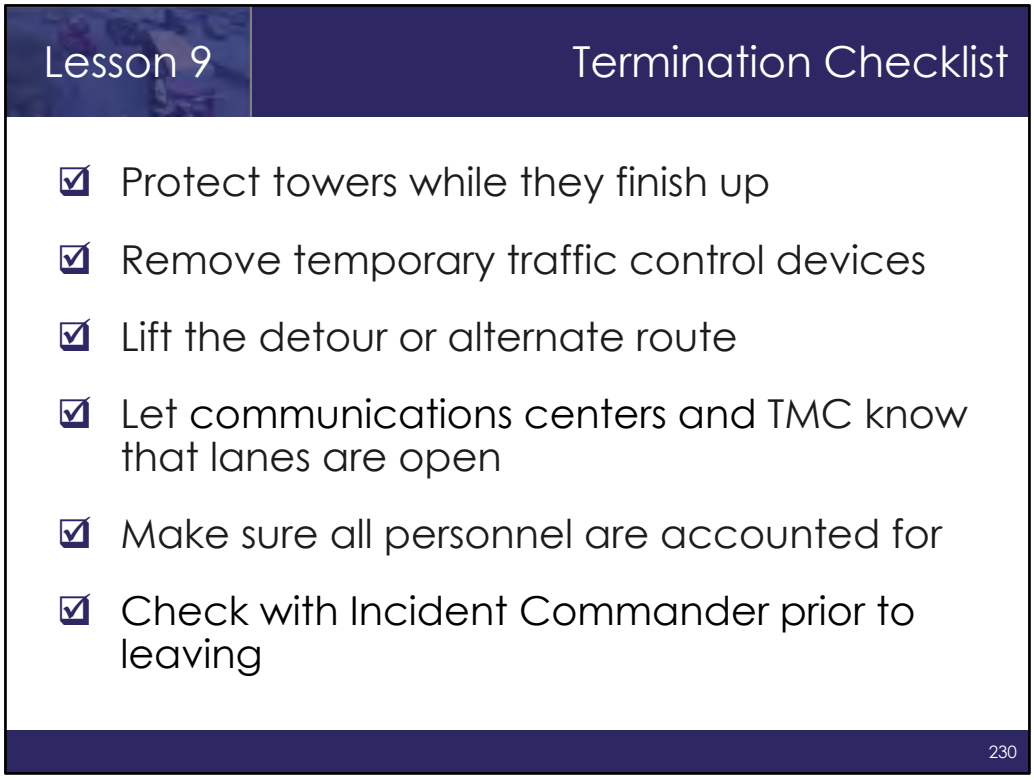
Lesson 9 Termination

- Final stage of incident response
- Termination includes:
  - Demobilizing and removing equipment, personnel, and response vehicles
    - It is very important to dismantle the scene from the Termination Area backwards to the Advance Warning Area
    - Maintain awareness of the potential for frustrated motorists that may be particularly aggressive and drive at higher speeds
  - Restoring traffic flow to normal or close to normal

229

Lesson Objective: 9.4

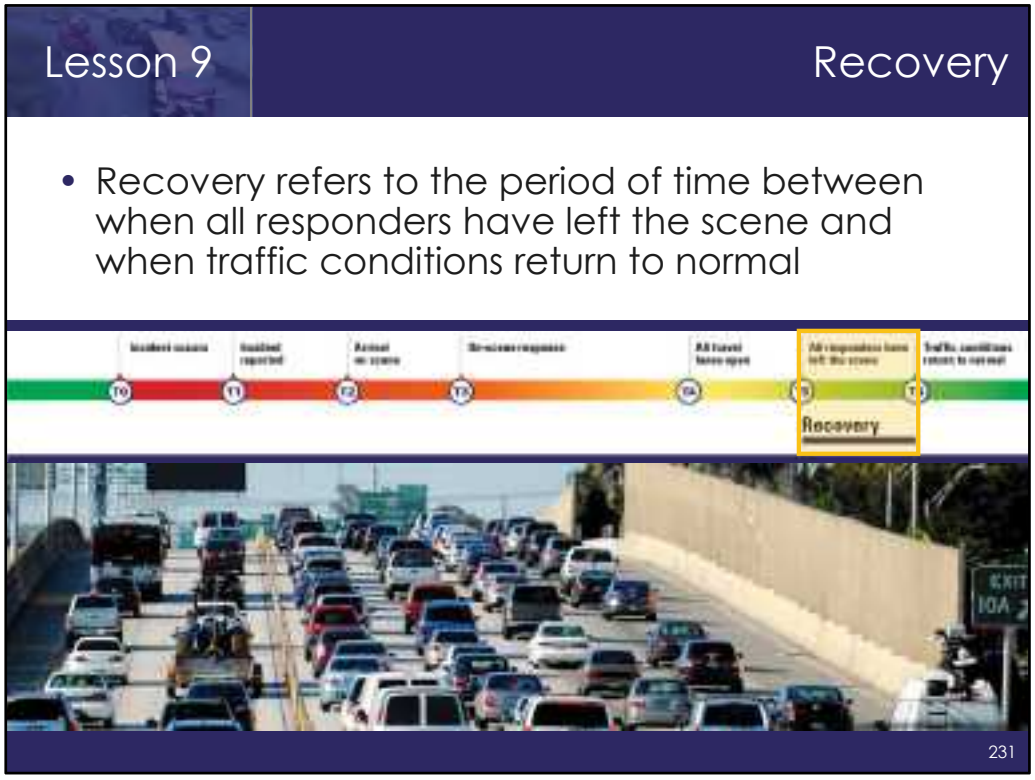
- All responders must exercise care when demobilizing, particularly if other responders remain present



Lesson Objective: 9.4

- **Animation:** Click forward to reveal the six check marks one at a time

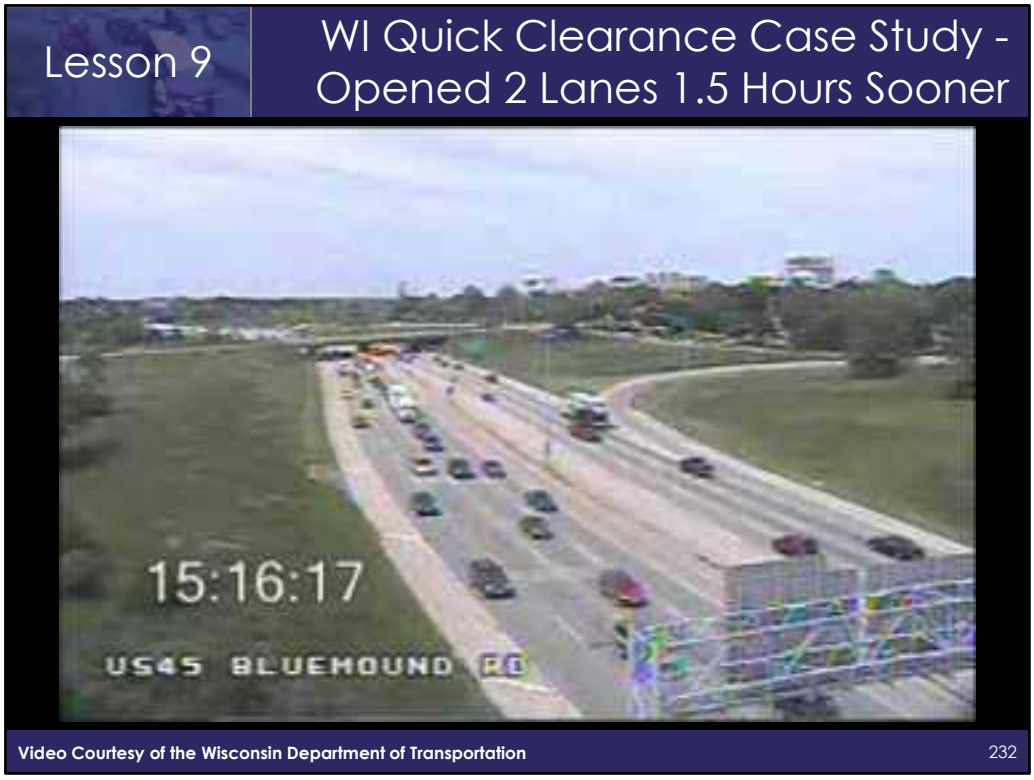
- As part of the quick clearance goals covered by the NUG, responder vehicles that are no longer required should leave the scene as soon as practical to minimize exposure to traffic and distraction to passing motorists
- As part of termination, the remaining responder vehicles should reposition their vehicles to keep the scene protected and to open lanes when it is practical and safe to do so
- Temporary traffic control should be repositioned to open travel lanes
- Emphasize that this checklist is very important and provides great guidance for safe and effective termination of an incident **[Click]**



Lesson Objective: --

- **Animation:** Click once to highlight recovery on the TIM timeline

- The length of the traffic queue directly impacts the recovery time **[Click]**
- Note that is some situations, such as when an incident occurs during normal morning or afternoon congestion, it may be difficult to establish a recovery time



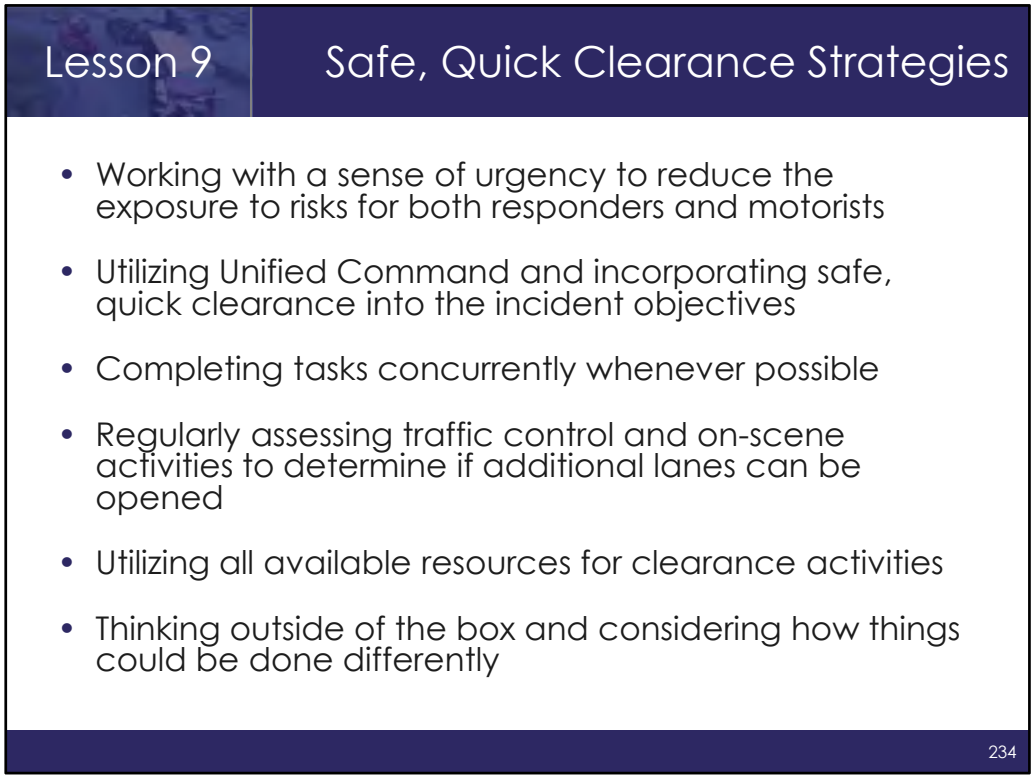
Lesson Objective: 9.1

- **Video:** L9-V1_WI_QC_Case_Study.wmv

- Incident timeline:
  - 15:16:17 - Incident occurs
  - 15:25:37 - Responders arrive on scene
  - 16:18:59 - Vehicles have cleared the area; towing and recovery providers have arrived on scene and are moving the truck that hit the semi
  - 16:29:05 - Beginning to move semi towards the shoulder to reopen lanes
  - 16:39:13 - Semi moved towards shoulder and out of Lanes 1 and 2
  - 17:15:44 - Highway department on scene and setting up cones along the entire Traffic Incident Management Area
  - 17:20:10 - Lanes 1 and 2 reopened to traffic
  - 17:39:35 - Towing and recovery professionals beginning to use air cushions to lift semi
  - 17:40:14 - Semi up-righted
  - 18:47:06 - Semi cab being removed from scene, Lane 3 has been reopened
  - 18:51:54 - Semi trailer being removed from scene
  - 18:57:23 - Highway department picking up cones

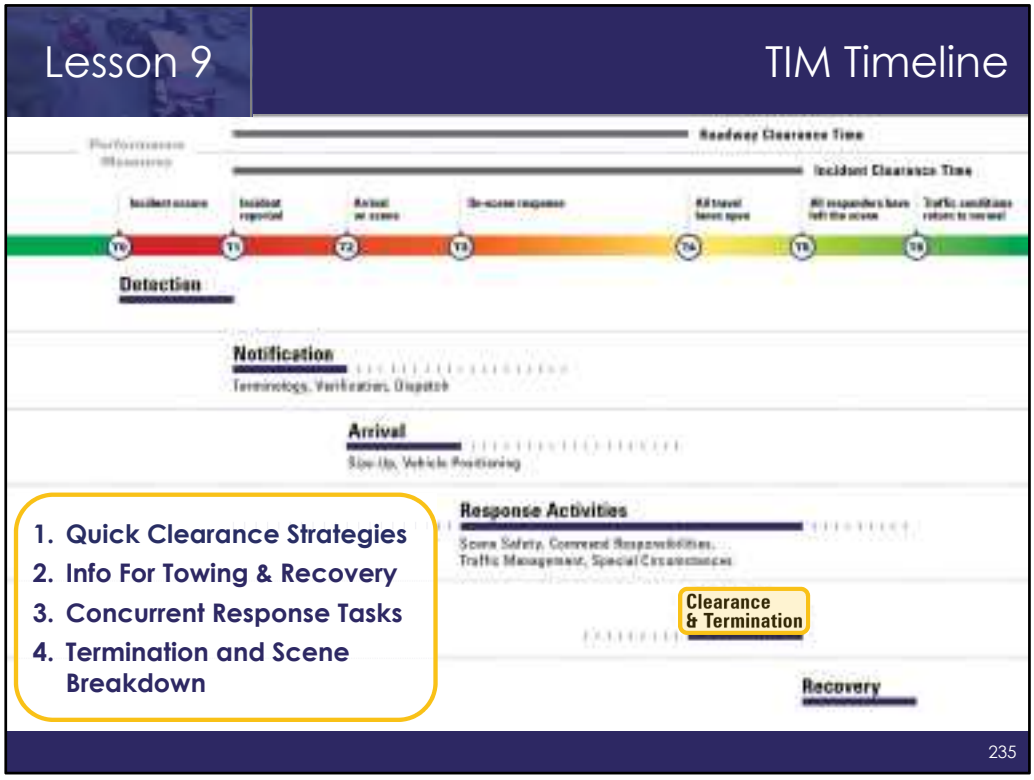
Lesson Objective: 9.1

- These pictures provide an up-close look at the towing and recovery professionals utilizing air cushions to upright the 18-wheeler while it is still loaded
- Depending on the amount of structural damage to the trailer, up-righting an overturned semi in this manner is not always an option



Lesson Objective: 9.1

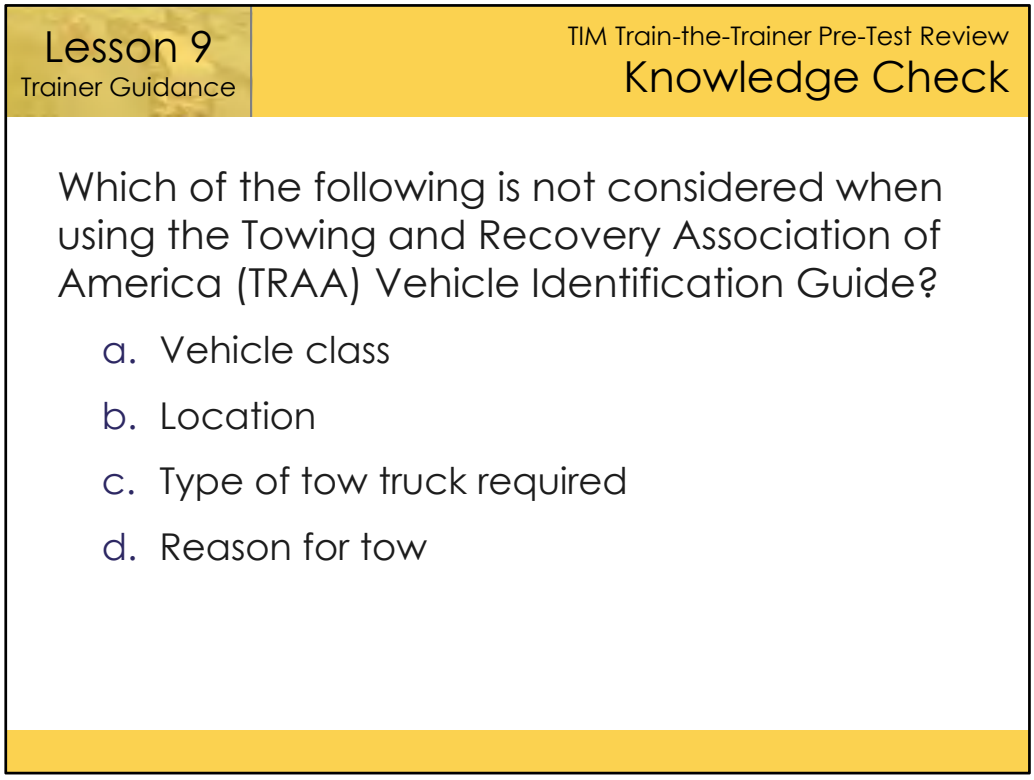
- In summary, use the case study to review and highlight safe, quick clearance strategies



TIM Timeline | Lesson Objectives Review

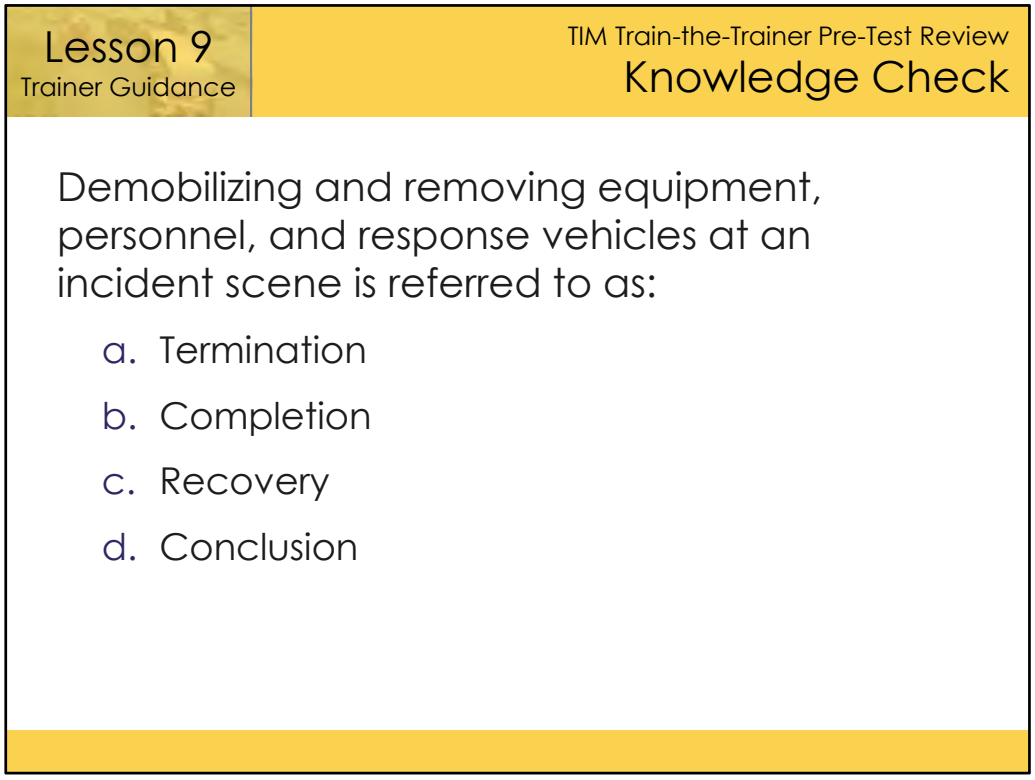
- **Animation:** Click forward to make the small yellow box appear and then click again to bring up the lesson objectives review

- **Ask/Discuss:** How can employing quick clearance strategies impact the TIM timeline?
  - Reiterate the concept of Move It or Work It
  - Reiterate that response activities should be occurring concurrently, not sequentially, whenever possible
    - Reference the pit crew analogy where every team member works simultaneously to accomplish the overall goal of the team



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 219



Knowledge Check	Correct Answer: a

- **Answer Reference:** Slide 229

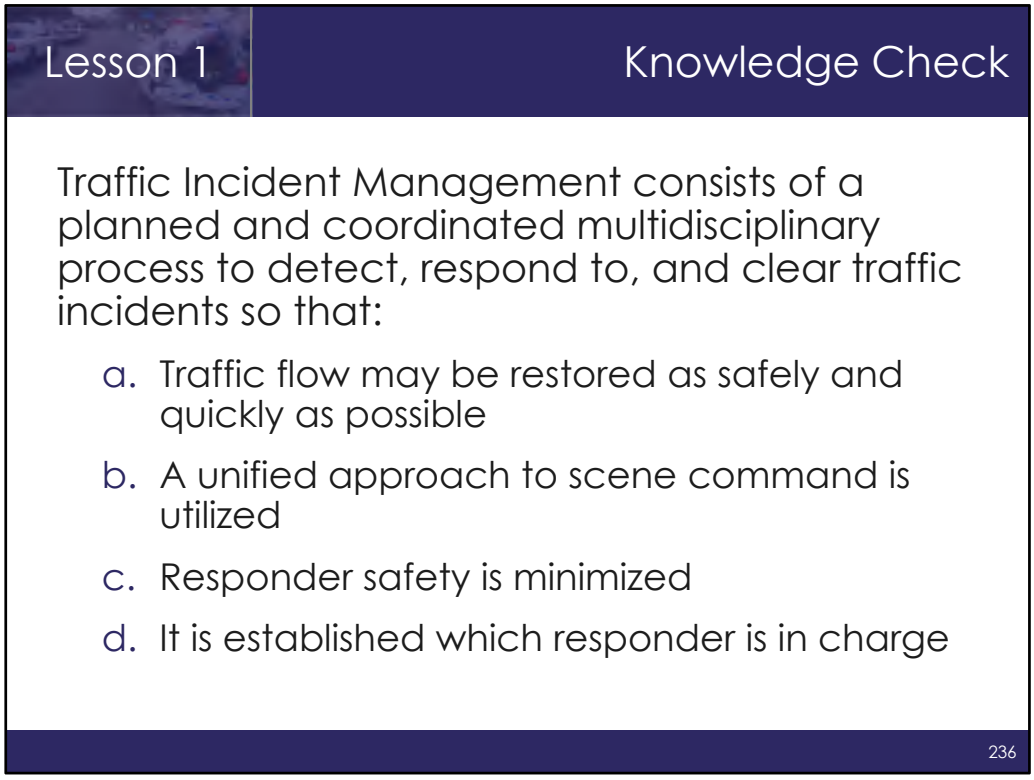
Trainer Guidance

Presentation Format

Knowledge Check

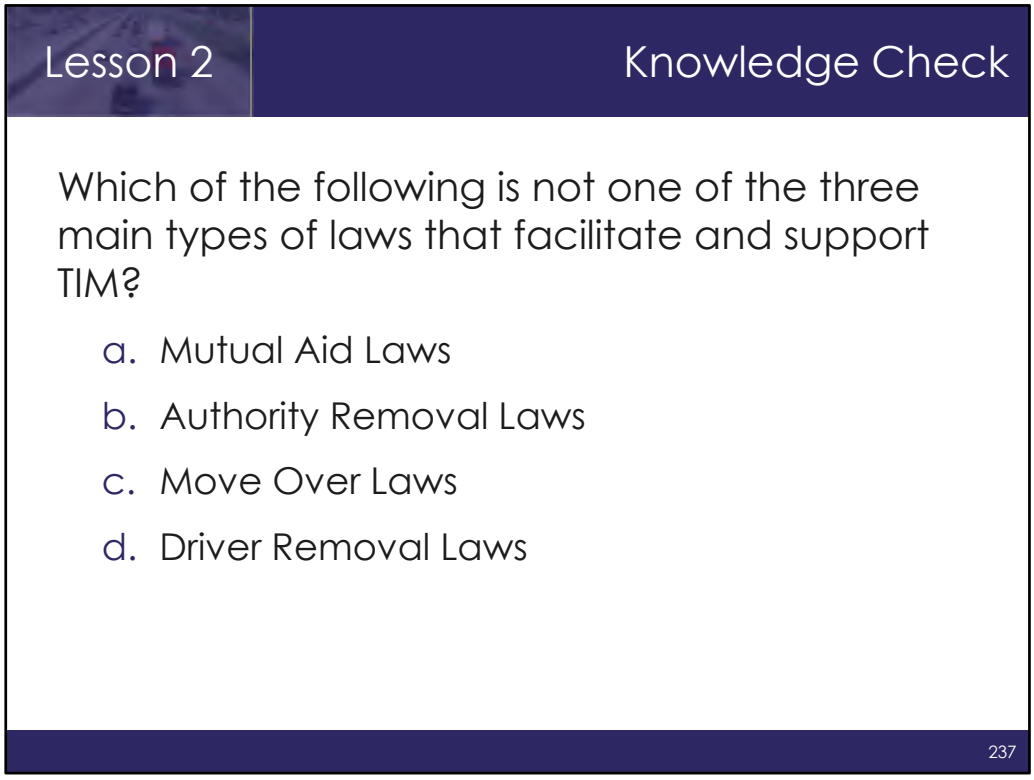
- The 10 questions from the Responder Training Course Pre-Test are included as an optional knowledge check and material review
  - The questions are the same as the questions from the Train-the-Trainer Pre-Test, but only half of the questions are used
- For each question, click once to reveal the correct answer

Knowledge Check



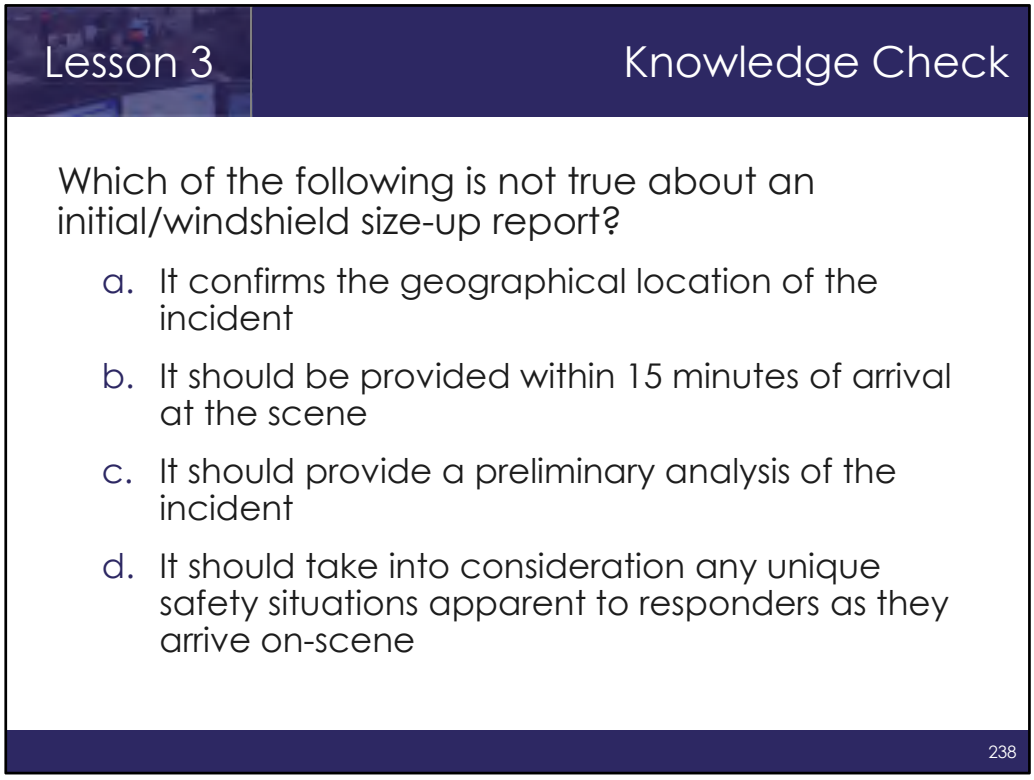
Knowledge Check	Correct Answer: a

- **Answer Reference:** Slide 26



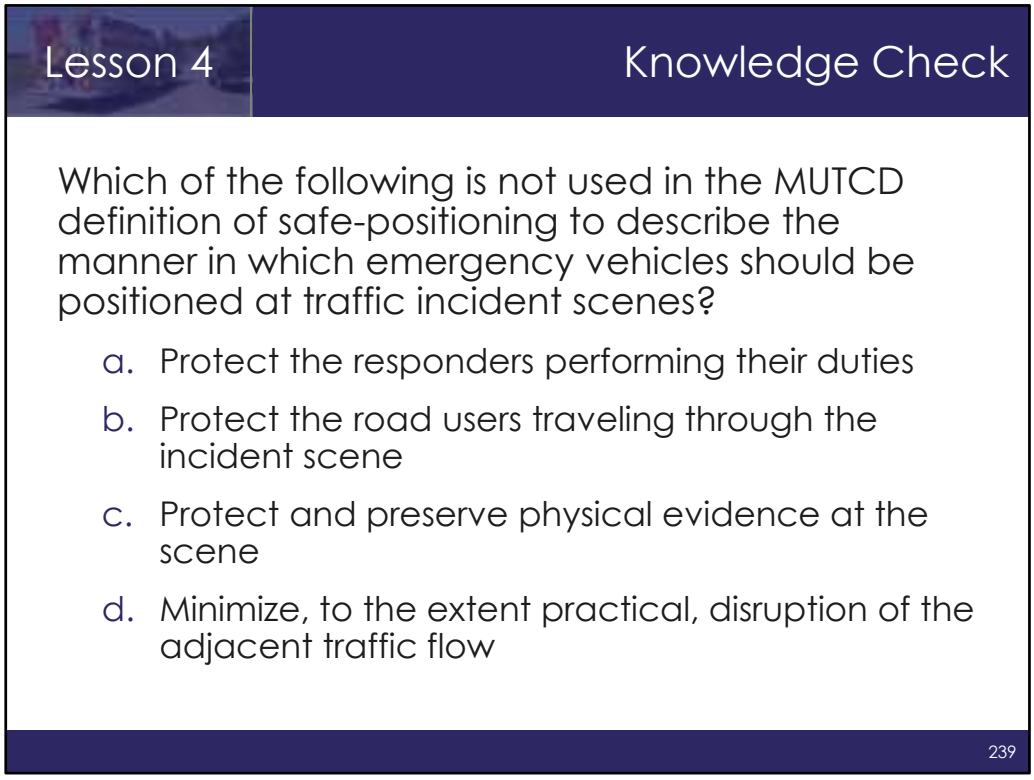
Knowledge Check	Correct Answer: a

- **Answer Reference:** Slides 35-41



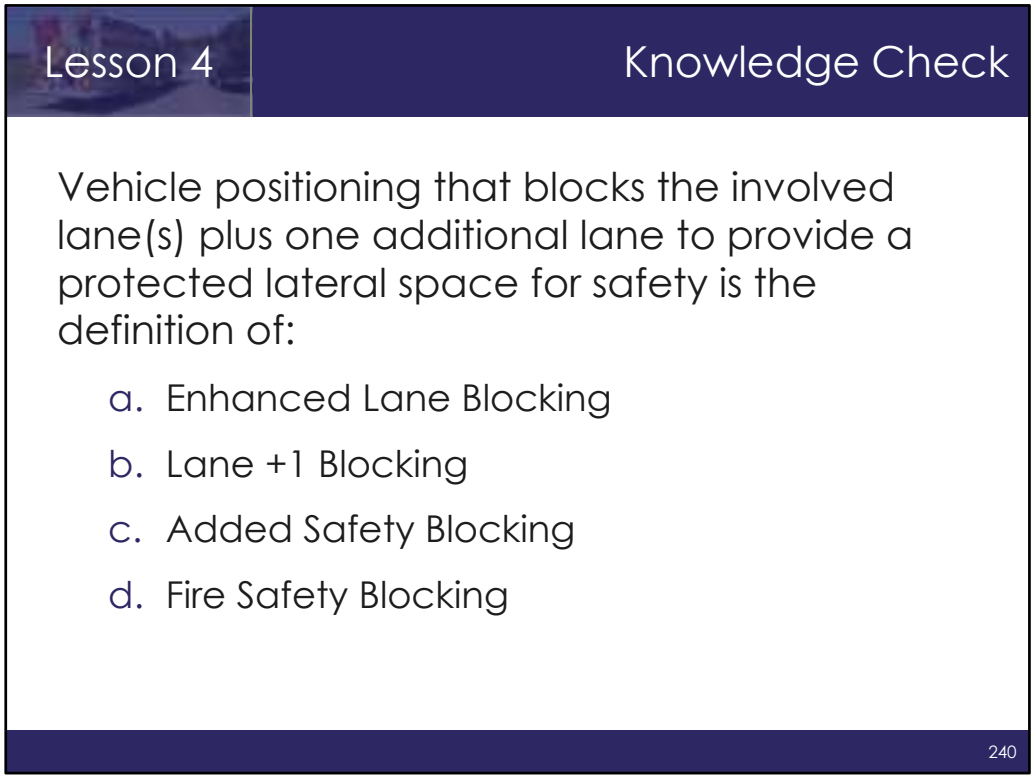
Knowledge Check	Correct Answer: b

- **Answer Reference:** Slide 67



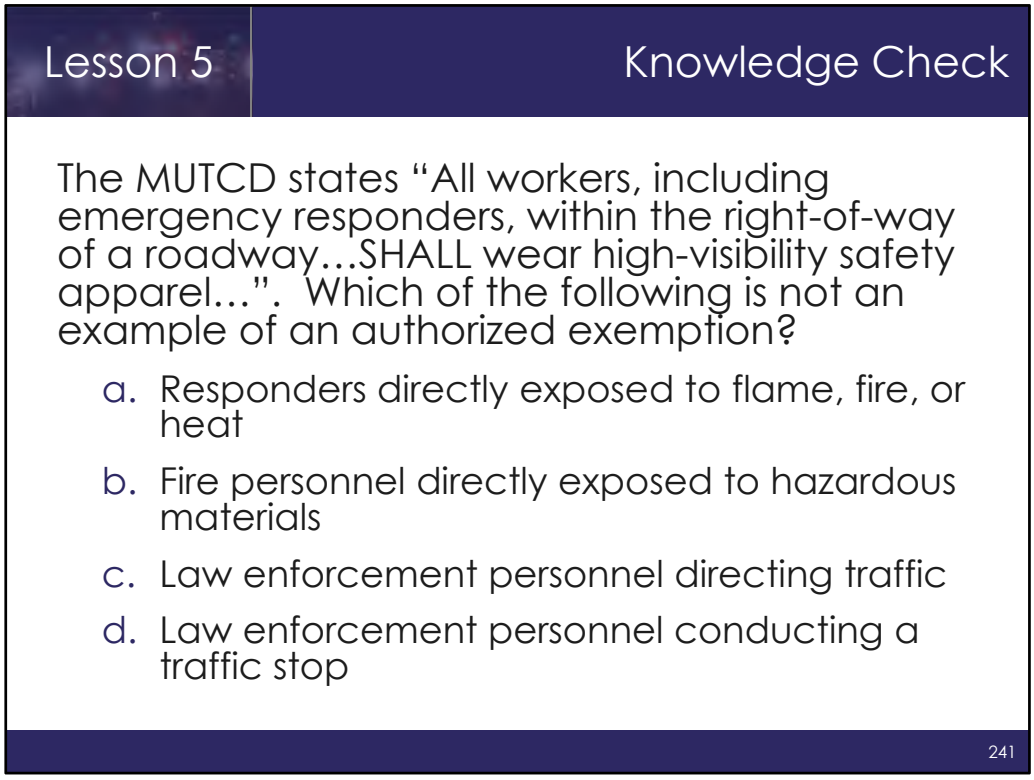
Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 85



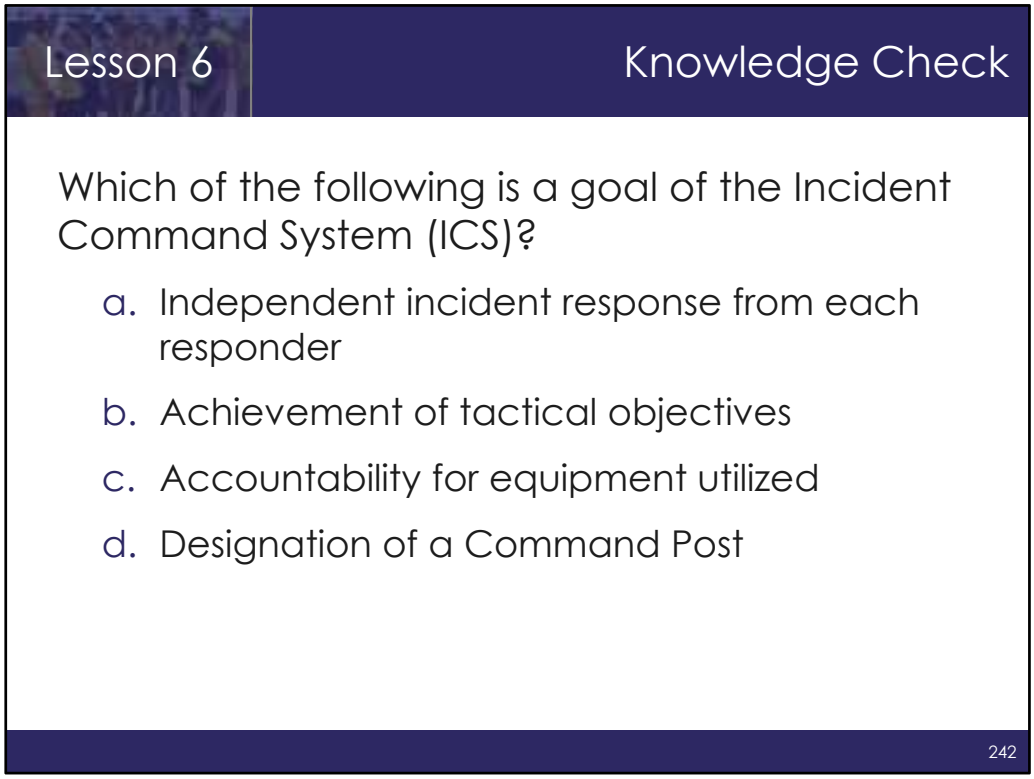
Knowledge Check	Correct Answer: b

- **Answer Reference:** Slide 97



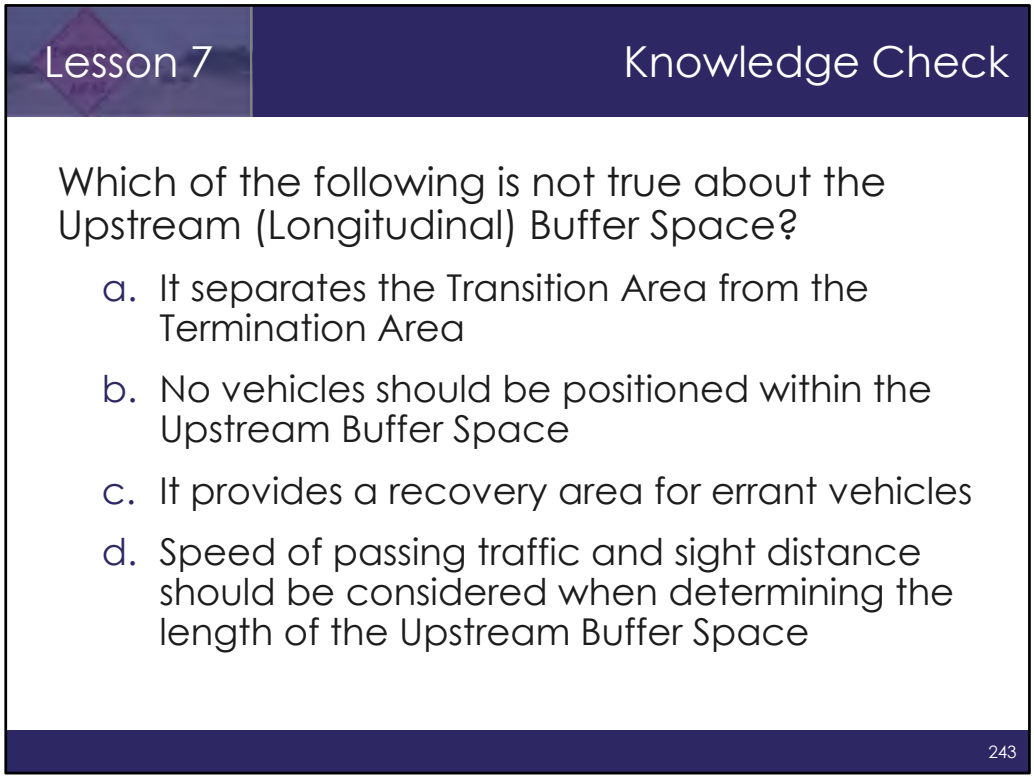
Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 125



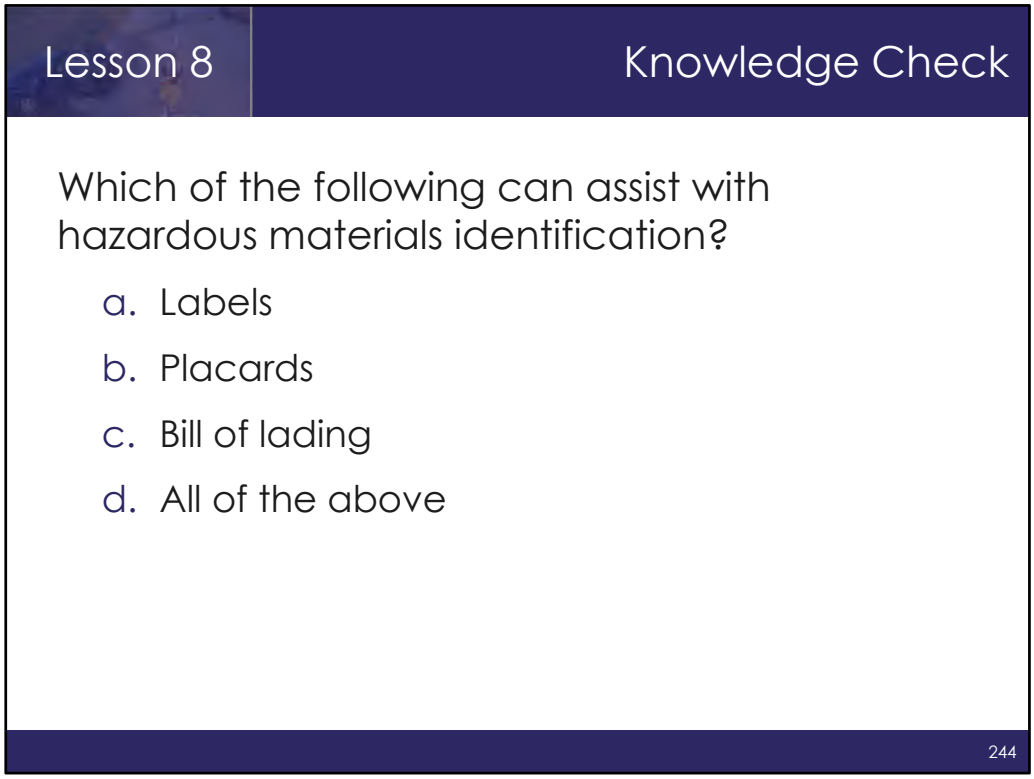
Knowledge Check	Correct Answer: b

- **Answer Reference:** Slide 140



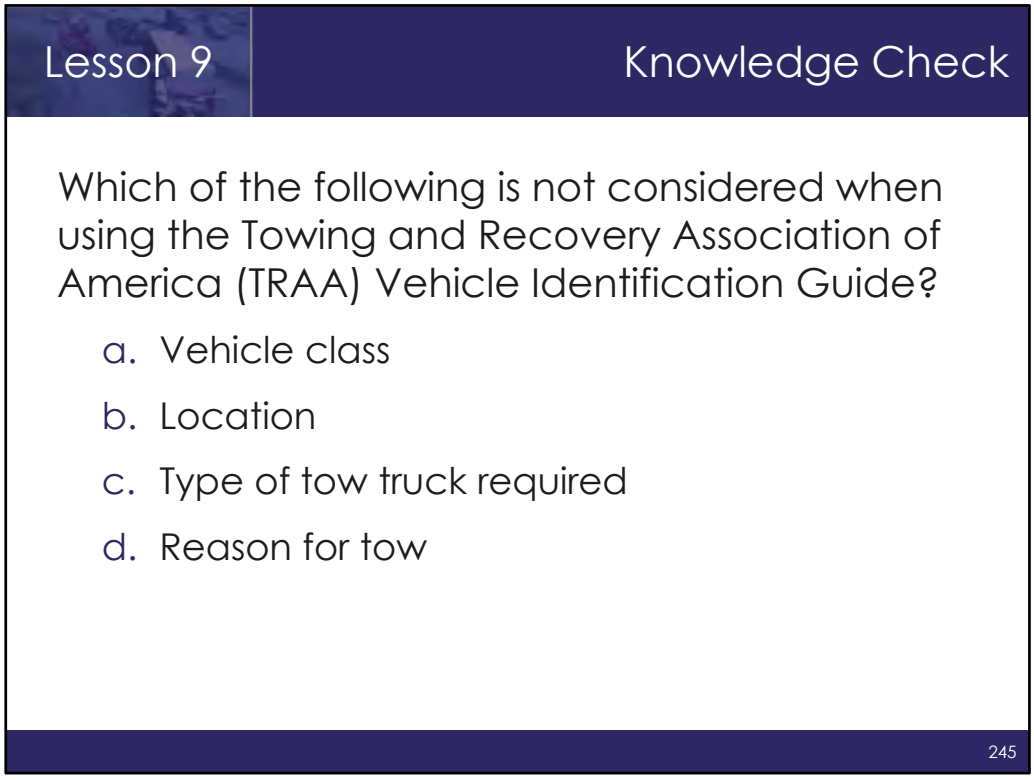
Knowledge Check	Correct Answer: a

- **Answer Reference:** Slide 170



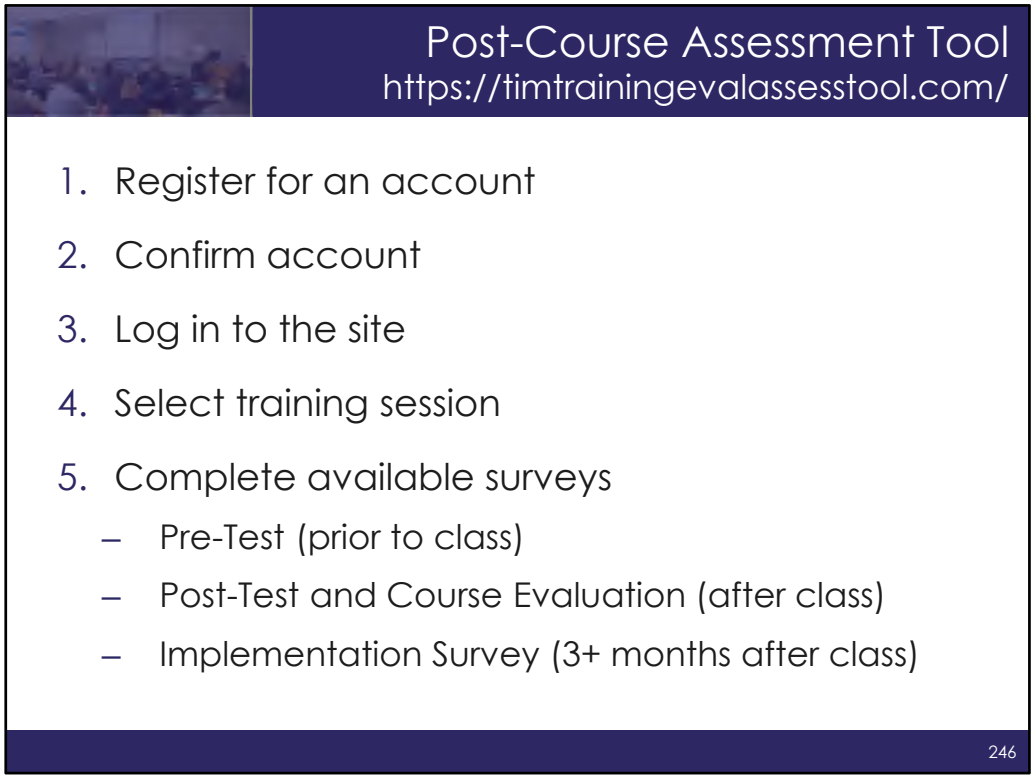
Knowledge Check	Correct Answer: d

- **Answer Reference:** Slide 189



Knowledge Check	Correct Answer: c

- **Answer Reference:** Slide 219



Post-Course Assessment Tool

- The surveys included in the National TIM Responder Training Program Post-Course Assessment Tool are intended to assess the training product, not individual performance
- Available surveys:
  - Pre-Test – Can be taken up to the day of the training, but users are asked not to take the pre-test if they have already attended the training session
  - Post-Test and Course Evaluation – Available the day of the training and users who pre-registered and took the pre-test will receive email reminders to take these surveys
    - Encourage students to take the post-test and complete the course evaluation even if they did not take the pre-test
  - Implementation Survey – An email reminder will be distributed three months after the training requesting users complete the implementation survey
    - The users' supervisors will also receive a request to take this survey if their contact information was provided

Activity A:
Tabletop Exercise

Activity A
Trainer Guidance

Tabletop Exercise Objectives

Tabletop exercises are intended to:

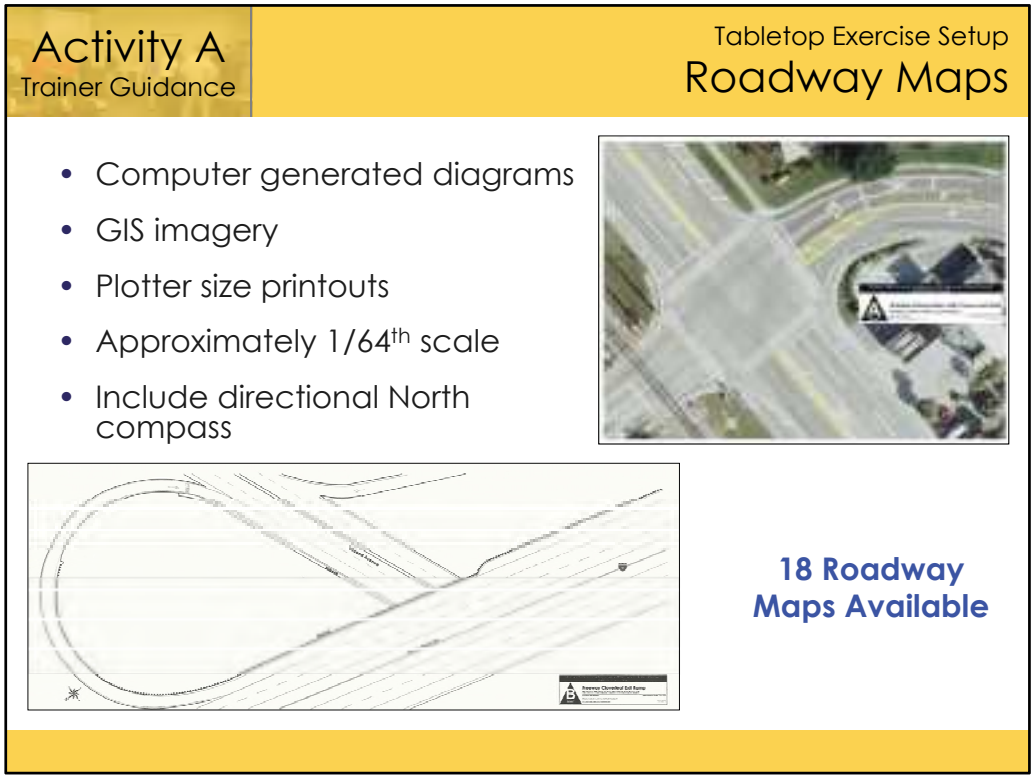
1. Provide responders an opportunity to demonstrate TIM competencies
2. Help responders better understand other disciplines
3. Promote communication and interaction among disciplines

Tabletop Exercise Setup

- The tabletop exercise is an excellent way for students to bring together the nine lessons of the training course
- Depending on the size of the group, between 30 and 60 minutes should be allocated for the activity
- Multiple tabletop scenarios may be used, allowing participants to attempt more than one scenario
- TIM tabletop exercises differ slightly from those designed for planned special events and emergency management
    - Evaluate a dynamic event/incident with limited resources
    - Deploy a smaller group of responders and disciplines
    - Emulate scenarios that occur every day
- The list above summarizes all of the items necessary to properly facilitate a tabletop exercise
    - Roadway maps with corresponding scenarios, the checklist, staging pad, and two-dimensional vehicles are all available on the National TIM Responder Training Program SharePoint site

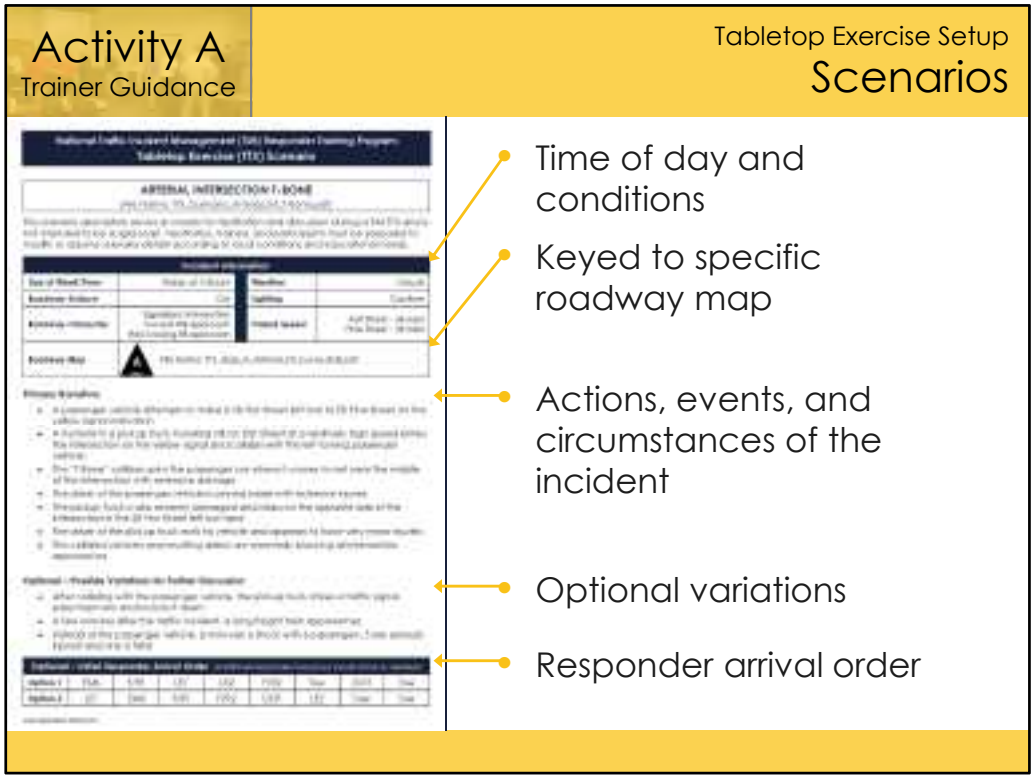
Tabletop Exercise Setup

- It is desirable to setup the tabletop exercises in a room separate from where classroom instruction has taken place
- If a separate room is not available, classroom seating may be modified to accommodate the tabletop exercise
- Large tables should be arranged without chairs so that students can stand around each table
    - Two or three smaller tables may need to be combined to achieve the required size



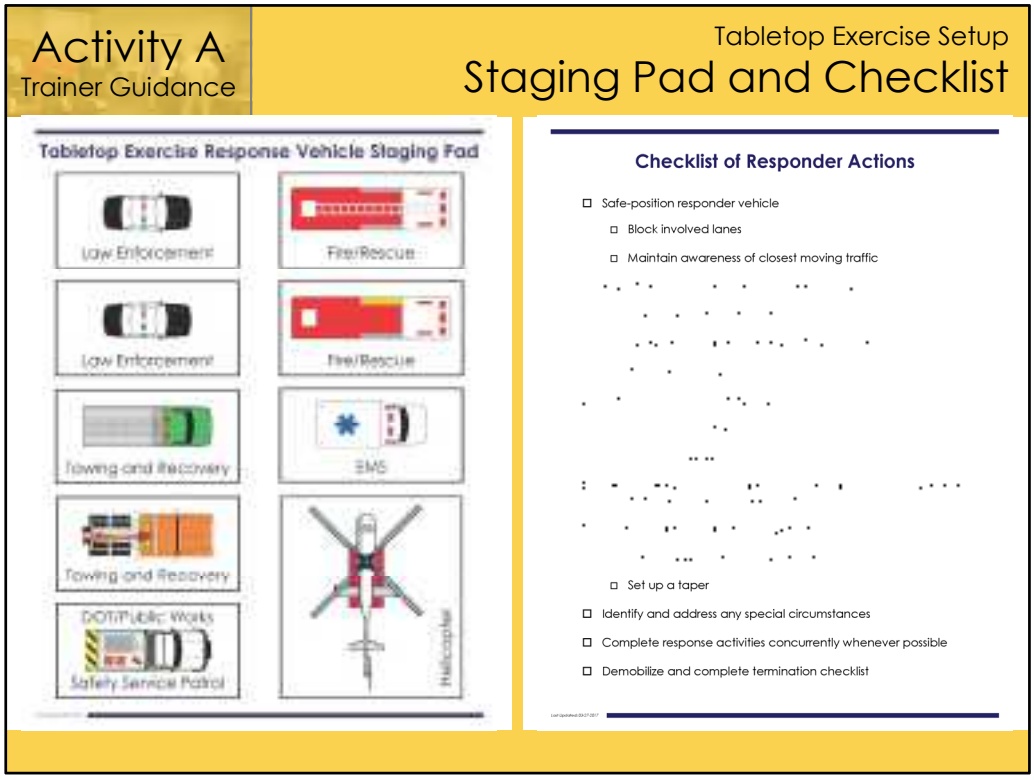
Tabletop Exercise Setup

- Roadway segments need to be printed in a large format like plotter sizes of paper
- A jurisdiction's planning, Geographic Information System (GIS), graphics, or engineering department may have the ability to print the tabletop layouts from a PDF or jpeg
- Computer generated roadway diagrams are easily created with drawing programs
    - Most law enforcement agencies use computers to complete crash reports and officers are very proficient at diagraming intersection and roadway scenes
- Most states and many local governments have access to aerial photography of roadways
    - Aerial photography may require the use of Photoshop or similar software to remove actual vehicles that were present when the roadway photo was originally taken
- The approximate scale of a typical toy die-cast vehicle is 1/64th
    - Roadway layouts with a lane width of approximately 1½ to 2 inches in width will approximately match the scale of the vehicles
- It is beneficial to include a directional compass or representation of north on the diagram
- A roadway image suitable for the exercises can be produced on a vinyl material or be printed and laminated for durability
- Hand drawing roadway scenes is another method for creating diagrams
    - One or more sheets of the paper from an easel pad can be used for hand drawn products



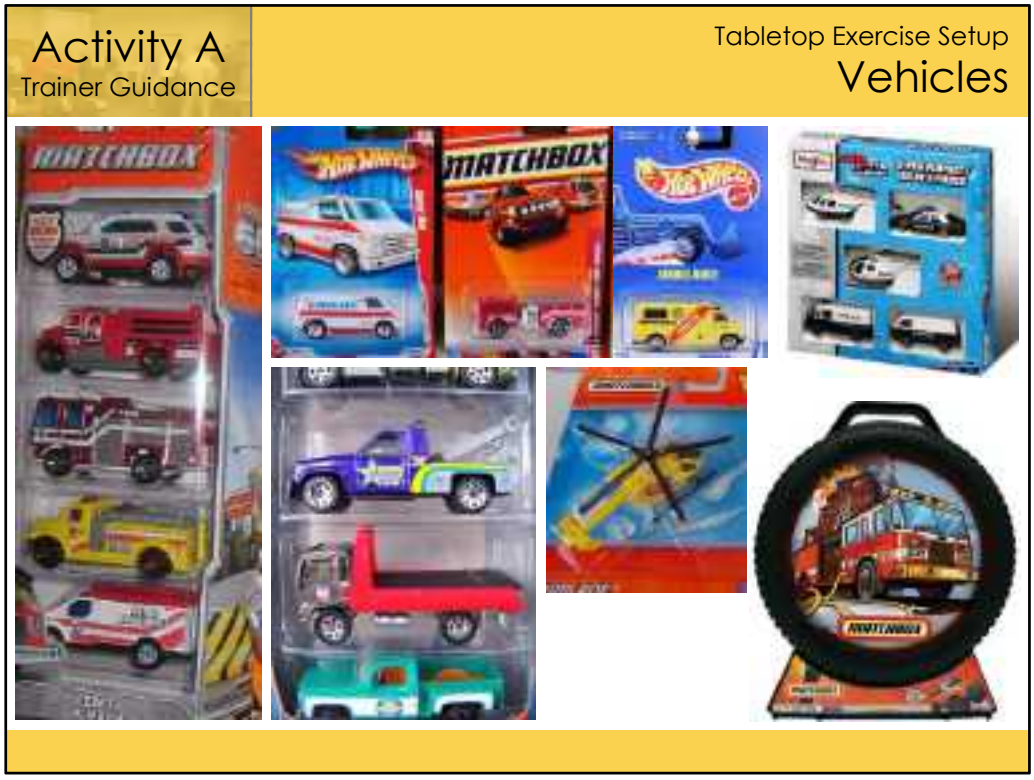
Tabletop Exercise Setup

- In order to conduct a tabletop exercise, a written scenario or description of the incident is required
    - The written scenario at a given tabletop should match the geometry and layout of the roadway diagram at that tabletop
    - The time of day, weather, road lighting, and other environmental conditions should be established in the scenario description
    - A series of bulleted points should be used to describe the vehicles, their direction of travel, and movements
    - The method of collision, the extent of vehicle damage, and the extent of injuries should be noted for each principle vehicle
    - Special circumstances should be noted as part of the scenario overview description including items such as;
        - Hazardous materials
        - Involvement of utilities such as energized wires, gas meters, etc.
        - Presence of a hybrid/electric vehicle as one of the crash-involved vehicles
        - Serious trauma patient or known fatality at incident scene
        - Medical helicopter operations
    - In actual TIM operations, the arrival sequences of disciplines is variable and randomizing responder arrival order for the tabletop exercise emulates that variability
        - Using this chart, the trainer will assign the arrival order for the scenario(s)
        - Participants at each table should position each responder vehicle and discuss their actions before simulating the arrival of the next responding unit



Tabletop Exercise Setup

- A staging pad should be provided at each scenario table and is where the responder vehicles are placed at the start of each exercise
- The use of the pad ensures that all required vehicles are present prior to the start of the tabletop exercise
    - Explain that if the tabletop exercise describes a rural road setting or a municipal street scene where a Safety Service Patrol would not normally be, then this yellow box can remain empty
- The pad also minimizes student handling/playing before the exercise begins
- A Checklist of Responder Actions should also be provided at each table and can be referenced when participants are making decisions about the tactics used in each scenario
- A copy of the Emergency Response Guidebook (ERG) is another good reference that could be made available at each table
    - Alternatively, participants can be encouraged to download and use the ERG app as part of the exercise



Tabletop Exercise Setup

- 1/64th scale die-cast vehicles are readily available at retailers and toy stores for about $1 to $2 each
- There is not a single kit or set that can be purchased for TIM training
    - All individual vehicles have to be purchased and pieced together
- Many different brands of vehicles are available
- Vehicles used for the tabletop exercises can be purchased as single vehicles or in multi-packs such as a 5-pack or a 10-pack
- New models of 1/64th scale vehicles are released throughout the calendar year meaning that all responder vehicle types may not be available all the time
- Online auctions and retailers can be used to fill out missing vehicle types fairly inexpensively
- Toy retailers also sell storage cases for these vehicles, or a plastic tackle box with movable dividers can be used

Tabletop Exercise Setup

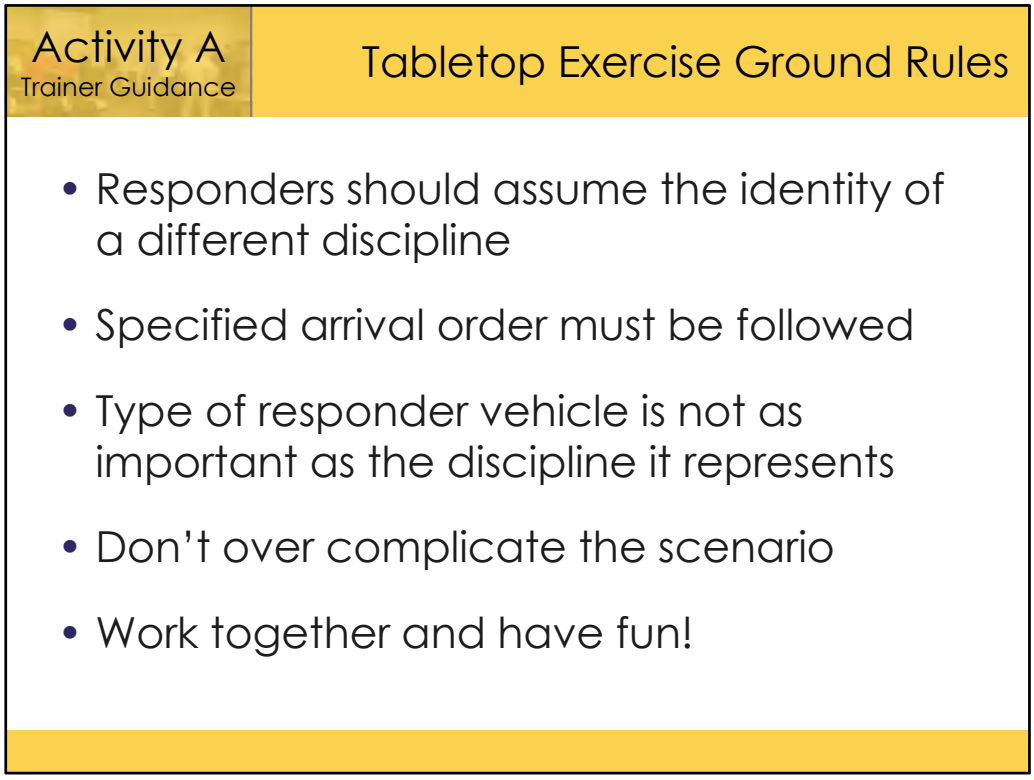
- At a minimum, each scenario requires 2 law enforcement, 2 towing, 2 fire/rescue, 1 EMS, 1 helicopter, and 1 type of DOT/public works vehicle along with one or two crash vehicles
- Eight to twelve additional civilian vehicles per exercise provide the realism of surrounding traffic
- A Safety Service Patrol vehicle can be created with any pickup truck by putting a label on the roof of the vehicle
- Selected vehicles can be damaged with a grinder or file to emulate crash damage
- A tractor-trailer truck, farm vehicle, hybrid/electric automobile, hazmat response vehicle, motorcycle, 10-wheel, or 18-wheel tanker truck will add realism and depth to the scenarios
- Continue to acquire novel or unique vehicles over time and add to the training kit

Tabletop Exercise Setup

- Traffic cones are commonly used in TIM and therefore their placement is an important part of each tabletop exercise
    - Electrical wire nuts are similar in shape and scale to a traffic cone
    - Building blocks can also be used to build traffic cones that are similar in scale
- Representations of the fluorescent pink advanced warning signs should also be provided for each tabletop scenario
    - Fluorescent pink construction paper can be cut into small squares and glued or taped to L-brackets or wire nuts to emulate these advance warning signs
    - Alternatively, building blocks can also be used to construct pink advance warning signs
- Other easily accessible items can help complete the tabletop kits – use your imagination
- Toothpicks, match sticks, pencil erasers, unused staples, thumb tacks, and similar small items make good spilled cargo
- Debris can be simulated with shreds of paper, wood chips, or similar items
- Wooden chopsticks, straws, and coffee stirrers can simulate cargo, street lights, or power company utility poles

Tabletop Exercise Setup

- Two-dimensional (2D) vehicles and equipment are available to supplement, or use as an alternative to, die-cast vehicles



Tabletop Exercise Ground Rules

- Emphasize that in the initial scenario, participants cannot operate the responder vehicle that represents their real-life discipline
- Explain that this requirement is to allow each participant an opportunity to learn about the roles of other disciplines on the TIM team
- Remind participants that the actual shape or design of the responder vehicles is not as important as the discipline that the vehicle represents

Activity A
Trainer Guidance

Tabletop Exercise Execution

- Maximum 8 to 10 participants/tabletop
- Mix disciplines/table
- Read scenario aloud
- Explain response order
- Observe interaction
- Review final solution
- Engage in discussion as necessary

Tabletop Exercise Execution

- Direct participants to divide into equal groups at available tables
- No more than 8 to 10 participants should be at any one tabletop exercise
- A diversity of responder disciplines is sought at each table
    - Law enforcement, fire/rescue, EMS, towing and recovery, DOT/public works, etc. in each group
- Direct one participant to read the scenario description aloud for the benefit of all participants at that tabletop layout
- Each participant should pick up a responder vehicle from the staging pad and wait for their turn
- Responder vehicles are placed on the scenario according to the arrival order specified in the scenario description
- Trainers should observe interaction, but do not get involved unless requested
- When the participants indicate a solution has been achieved, the trainer should review and engage in any discussion needed
- Participants are directed to reset the scenario and move to the next table/scenario if more than one tabletop exercise will be attempted

APPENDICES

A. Trainer Techniques and Guidance

B. National Unified Goal for Traffic Incident Management Brochure

C. Maine TIM Laws

D. Manual on Uniform Traffic Control Devices

   1. Chapter 6I – Control of Traffic Through Traffic Incident Management Areas
   2. Section 6D.03 – Worker Safety Considerations

E. American Traffic Safety Services Association High-Visibility Safety Apparel Brochure

F. Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped with High-Voltage Batteries

   1. Law Enforcement/Emergency Medical Services/Fire Department
   2. Towing and Recovery Operators and Vehicle Storage Facilities
   3. Vehicle Owner/General Public

G. Towing and Recovery Association of America Vehicle Identification Guide

TRAINER TECHNIQUES AND GUIDANCE

Positive Presentation Skills

- Establishing style – develop your own style, use what works for you
- Establishing climate – create a comfortable learning environment
- Listening – always allow the student to finish their statement before you start to formulate your answer
- Presenting material – use a professional manner to present the material
- Encouraging involvement – ask your students for their input

Presentation Good Practices

- Limit the use of war stories
- Ask questions
- Stay in control
- Use body language appropriately
- Be yourself
- Use visual aids
- Nice to know versus need to know
- Cover the material specified in the Train-the-Trainer Guide

Delivery Skills

- Use an "Ice Breaker"
- Communicate the session objectives at the beginning of your presentation
- Greet the students individually and as a group
- Learn the names of the students quickly, consider having name tents available
- Supplement PowerPoint slide information with examples relating to the specific location
- Speak loud enough to ensure participants in the back can hear
- Enunciate your words clearly
- Avoid distracting mannerisms such as jingling change or playing with your hair
- Involve participants by encouraging and asking questions
- Pace your delivery according to the time schedule and the material to be covered
- Keep aware of class climate
- Recognize your strengths and weaknesses
    - Maximize your strengths and minimize your weakness
- Avoid reading directly from the slides
- Be sensitive to participants' literacy differences

Answering Questions

- Repeat the question for the entire group
- Don't pretend to know all the answers
- If you don't know something:
    - Discuss the question with the class
    - Let the participants know you will get the answer (consult material, call someone)
    - Always follow up

Trainer "Fails" To Avoid

- Appearing unprepared
- Starting late and/or being off schedule
- Apologizing for yourself or the organization
- Being unfamiliar with the training materials or their content
- Not establishing personal rapport
- Not establishing a positive image quickly
- Using inappropriate humor or language
- Coming on as an expert or a know-it-all

Difficult Questions and Students

The Talker:

- Thank the person and move on to the next subject
- Ask others to comment on his/her remarks
- Thank the person for their participation and indicate it is time to hear from others
- Tactfully ask the person to give someone else a chance
- Use humor to invite others to speak up
- Deliberately turn to others and ask for their opinions
- Cut across the person's flow of talk with a summarizing statement

The Complainer:

- Apologize for the person's distress
- Clarify your distance from the decision that generated the complaint
- Evaluate the desired recourse
- Avoid getting personal
- Refer the issue to the rest of the group

The Rambler:

- Summarize and recap the points that were covered prior to the person's statement
- Try to distill the key points from the person's statement
- When this individual stops for a breath, express your thanks
- Ask clarifying questions
- Set time limits for comments (as part of the original ground rules or to ensure that the agenda can be covered)
- Diplomatically interrupt to refocus the person on the content
- When the person pauses for a breath, ask which part of the question he is discussing
- Say "Thank you, but let's see what others have to say now"
- Use gentle humor to refocus the person
- Listen carefully to find the relevant points that are made

Argumentative:

- Keep your cool, you will never win the argument
- Acknowledge the level of passion and ask for the reason behind it
- Request that the person back up assertions – ask for evidence
- Avoid getting personal
- Refer the question to the group and then to him/her
- Try to win this person over by finding some good reasons to agree with some points
- Pretend not to hear him/her
- Agree to disagree
- If nothing else works, suggest that your differences be cleared up later

Dealing with Dysfunctional Behavior

- Beyond difficult questions, some participants may actually be disruptive, difficult students
- If the disruptive student is constantly making negative comments, reflect the comments (as statements) back to the group for feedback
- Avoid arguing or debating with the participant one-on-one
- Approach the person in private during a break:
    - Explain the situation and give specific examples of the behavior
    - Describe the negative impact the behavior is having on others or the overall learning experience
    - Ask the participant for ideas about how he/she will react going forward
    - Gain agreement with the participant
    - Express confidence with the individual and appreciation for the contributions they could be making
- If the disruptive behavior continues after you have met, approach the participant again in private
    - Put the person "at choice," in other words, explain that there is a choice to 1) stay in the training and participate to get the most out of it, 2) stay in the training and stop the behavior or 3) leave the training and forgo credit for completion
    - Ask the participant for their choice
    - In many (if not most) cases, your intervention will take care of the dysfunctional behavior
    - If so, rewarding and recognizing the new constructive behavior is essential in maintaining both the positive learning environment and the self-esteem of the participant

National Unified Goal
for Traffic Incident Management

Working Together for Improved Safety, Clearance and Communications

ntimc
National Traffic Incident Management Coalition

WHAT IS THE NATIONAL UNIFIED GOAL?

The Traffic Incident Management National Unified Goal is:

- Responder safety;
- Safe, quick clearance; and
- Prompt, reliable, interoperable communications.

COMMITMENT STATEMENT

The NTIMC is committed to working together to promote, develop, and sustain multidisciplinary, multijurisdictional Traffic Incident Management (TIM) programs to achieve enhanced responder safety; safe, quick traffic incident clearance; and more prompt, reliable, interoperable communications.

HOW WILL THE GOAL BE ACHIEVED?

NTIMC will achieve the three major objectives of the National Unified Goal through 18 strategies. Key strategies include recommended practices for multidisciplinary TIM operations and communications; multidisciplinary TIM training; goals for performance and progress; promotion of beneficial technologies; and partnerships to promote driver awareness.

CROSS-CUTTING STRATEGIES

- **Strategy 1. TIM Partnerships and Programs.** Traffic Incident Management partners at the national, state, regional and local levels should work together to promote, develop and sustain effective Traffic Incident Management Programs.

- **Strategy 2. Multidisciplinary NIMS and TIM Training.** Traffic Incident Management responders should receive multidisciplinary National Incident Management System (NIMS) and Traffic Incident Management (TIM) training.

- **Strategy 3. Goals for Performance and Progress.** Traffic Incident Management partners should work together to establish and implement performance goals at the state, regional and local levels for increasing the effectiveness of Traffic Incident Management, including methods for measuring and monitoring progress.

- **Strategy 4. TIM Technology.** Traffic Incident Management partners at the national, state, regional and local levels should work together for rapid and coordinated implementation of beneficial new technologies for Traffic Incident Management.

- **Strategy 5. Effective TIM Policies.** Traffic Incident Management partners at the national, state, regional and local levels should join together to raise awareness regarding proposed policies and legislation that affect achievement of the National Unified Goal objectives of Responder Safety; Safe, Quick Clearance; and Prompt, Reliable Traffic Incident Communications.

- **Strategy 6. Awareness and Education Partnerships.** Broad partnerships should be

developed to promote public awareness and education regarding the public's role in safe, efficient resolution of incidents on the roadways.

OBJECTIVE 1: RESPONDER SAFETY

- **Strategy 7. Recommended Practices for Responder Safety.** Recommended practices for responder safety and for traffic control at incident scenes should be developed, and widely published, distributed and adopted.

- **Strategy 8. Move Over/Slow Down Laws.** Drivers should be required to Move Over/Slow Down when approaching traffic incident response vehicles and traffic incident responders on the roadway.

- **Strategy 9. Driver Training and Awareness.** Driver training and awareness programs should teach drivers how to react to emergencies on the roadway in order to prevent secondary incidents, including traffic incident responder injuries and deaths.

OBJECTIVE 2: SAFE, QUICK CLEARANCE

- **Strategy 10. Multidisciplinary TIM Procedures.** Traffic Incident Management partners at the state, regional and local levels should develop and adopt multidisciplinary procedures for coordination of Traffic Incident Management operations, based on national recommended practices and procedures.

- **Strategy 11. Response and Clearance Time Goals.** Traffic Incident Management partners at the state, regional and local levels should commit to achievement of goals for traffic incident response and clearance times (as a component of broader goals for more effective Traffic Incident Management--see Strategy 3).

- **Strategy 12. 24/7 Availability.** Traffic Incident Management responders and resources should be available 24/7.

OBJECTIVE 3: PROMPT, RELIABLE INCIDENT COMMUNICATIONS

- **Strategy 13. Multidisciplinary Communications Practices and Procedures.** Traffic incident responders should develop and implement standardized multidisciplinary traffic incident communications practices and procedures.

- **Strategy 14. Prompt, Reliable Responder Notification.** All traffic incident responders should receive prompt, reliable notification of incidents to which they are expected to respond.

- **Strategy 15. Interoperable Voice and Data Networks.** State, regional and local Traffic Incident Management stakeholders should work together to develop interoperable voice and data networks.

- **Strategy 16. Broadband Emergency Communications Systems.** National Traffic Incident Management stakeholders (working through the National Traffic Incident Management Coalition) should work together to reduce the barriers to integrated broadband emergency communications systems development and integration (both wired and wireless).

- **Strategy 17. Prompt, Reliable Traveler Information Systems.** Traffic Incident Management partners should encourage development of more prompt and reliable traveler information systems that will enable drivers to make travel decisions to reduce the impacts of emergency incidents on traffic flow.

- **Strategy 18. Partnerships with News Media and Information Providers.** Traffic Incident Management partners should actively partner with news media and information service providers to provide prompt, reliable incident information to the public.

AUTHORITY REMOVAL LAW

Title 29-A §2069. Authority to remove an improperly parked vehicle; vehicles used in commission of a crime

1. Parked in violation. A law enforcement officer or the Department of Transportation may cause the removal of a vehicle or require the operator to move the vehicle from a location in violation of section 2068, subsection 1 to a location where parking is permitted.
   [1993, c. 683, Pt. A, §2 (NEW); 1993, c. 683, Pt. B, §5 (AFF) .]

2. Interfering with snow removal, normal traffic movement. A law enforcement officer may cause the removal to a suitable parking place, at the expense of the registered owner, of a vehicle interfering with snow removal or the normal movement of traffic or parked within the limits of a right-of-way. The Department of Transportation may take the same action for a vehicle standing on property under its jurisdiction.
   [1993, c. 683, Pt. A, §2 (NEW); 1993, c. 683, Pt. B, §5 (AFF) .]

3. Vehicle used in connection with a crime or operating after suspension traffic infraction. A law enforcement officer may cause the removal to a suitable parking place of a vehicle connected with:

   A. The arrest of the operator or owner of that vehicle; [2015, c. 159, §4 (NEW).]

   B. The issuance of a summons for a traffic infraction as described in section 2412-A, subsection 8; [2015, c. 159, §4 (NEW).]

   C. A suspended registration pursuant to Title 23, section 1980 or the suspension of the owner's right to operate the vehicle pursuant to section 2461 for failure to pay a toll; or [2015, c. 159, §4 (NEW).]

   D. The commission of a crime. [2015, c. 159, §4 (NEW).]

   When a vehicle has been removed pursuant to paragraph C, the vehicle may be released only after the tolls, fees and penalties have been paid and the vehicle's registration has been reinstated or the owner's right to operate the vehicle has been restored.
   [2015, c. 159, §4 (AMD) .]

4. Liability for damages; charges. The State, a political subdivision of the State or a law enforcement officer is not liable for damage that may be caused by removal of a vehicle or for any towing or storage charges.
   [1993, c. 683, Pt. A, §2 (NEW); 1993, c. 683, Pt. B, §5 (AFF) .]

5. Notification. Upon removal of a vehicle in accordance with this section, the notification requirements and provisions for payment of towing and storage costs in chapter 15, subchapter 3 apply.
   [RR 2009, c. 2, §82 (COR) .]

SECTION HISTORY - 1993, c. 683, §A2 (NEW). 1993, c. 683, §B5 (AFF). RR 2009, c. 2, §82 (COR). 2009, c. 493, §1 (AMD). 2015, c. 159, §4 (AMD).

MOVE OVER LAW

Title 29-A §2054.9. Emergency and auxiliary lights; sirens; privileges

9. Stationary vehicles. The operator of a vehicle passing a stationary authorized emergency vehicle using an emergency light or a stationary public service vehicle using its authorized lights, with due regard to the safety and traffic conditions, shall:

    A. Pass in a lane not adjacent to that of the authorized emergency vehicle or public service vehicle, if possible; or [2015, c. 32, §4 (AMD).]

    B. If passing in a nonadjacent lane is impossible or unsafe, pass the emergency vehicle or public service vehicle at a careful and prudent speed reasonable for passing the authorized emergency vehicle or public service vehicle safely. [2015, c. 32, §4 (AMD).]

A violation of this subsection is a traffic infraction for which a minimum fine of $250 must be adjudged.

[2015, c. 32, §4 (AMD) .]

§2054.1.I.1: "Public service vehicle" means a vehicle used to assist members of the public or law enforcement officers with disabled vehicles or to remove debris from a roadway, or a vehicle used to construct, maintain, inspect or repair utility infrastructure, including, but not limited to, electricity, water, sewer, cable, telephone, gas and natural gas infrastructure. "Public service vehicle" includes a wrecker.

[2015, c. 32, §1 (NEW).]

CHAPTER 6I. CONTROL OF TRAFFIC THROUGH TRAFFIC INCIDENT MANAGEMENT AREAS

Section 6I.01 General

Support:

01 The National Incident Management System (NIMS) requires the use of the Incident Command System (ICS) at traffic incident management scenes.

02 A traffic incident is an emergency road user occurrence, a natural disaster, or other unplanned event that affects or impedes the normal flow of traffic.

03 A traffic incident management area is an area of a highway where temporary traffic controls are installed, as authorized by a public authority or the official having jurisdiction of the roadway, in response to a road user incident, natural disaster, hazardous material spill, or other unplanned incident. It is a type of TTC zone and extends from the first warning device (such as a sign, light, or cone) to the last TTC device or to a point where vehicles return to the original lane alignment and are clear of the incident.

04 Traffic incidents can be divided into three general classes of duration, each of which has unique traffic control characteristics and needs. These classes are:

A. Major—expected duration of more than 2 hours,
B. Intermediate—expected duration of 30 minutes to 2 hours, and
C. Minor—expected duration under 30 minutes.

05 The primary functions of TTC at a traffic incident management area are to inform road users of the incident and to provide guidance information on the path to follow through the incident area. Alerting road users and establishing a well defined path to guide road users through the incident area will serve to protect the incident responders and those involved in working at the incident scene and will aid in moving road users expeditiously past or around the traffic incident, will reduce the likelihood of secondary traffic crashes, and will preclude unnecessary use of the surrounding local road system. Examples include a stalled vehicle blocking a lane, a traffic crash blocking the traveled way, a hazardous material spill along a highway, and natural disasters such as floods and severe storm damage.

Guidance:

06 *In order to reduce response time for traffic incidents, highway agencies, appropriate public safety agencies (law enforcement, fire and rescue, emergency communications, emergency medical, and other emergency management), and private sector responders (towing and recovery and hazardous materials contractors) should mutually plan for occurrences of traffic incidents along the major and heavily traveled highway and street system.*

07 *On-scene responder organizations should train their personnel in TTC practices for accomplishing their tasks in and near traffic and in the requirements for traffic incident management contained in this Manual. On-scene responders should take measures to move the incident off the traveled roadway or to provide for appropriate warning. All on-scene responders and news media personnel should constantly be aware of their visibility to oncoming traffic and wear high-visibility apparel.*

08 *Emergency vehicles should be safe-positioned (see definition in Section 1A.13) such that traffic flow through the incident scene is optimized. All emergency vehicles that subsequently arrive should be positioned in a manner that does not interfere with the established temporary traffic flow.*

09 *Responders arriving at a traffic incident should estimate the magnitude of the traffic incident, the expected time duration of the traffic incident, and the expected vehicle queue length, and then should set up the appropriate temporary traffic controls for these estimates.*

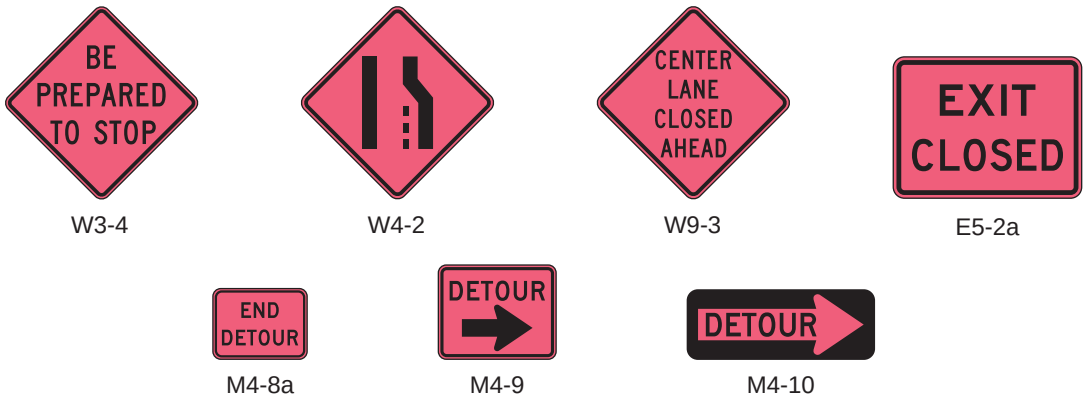
Option:

10 Warning and guide signs used for TTC traffic incident management situations may have a black legend and border on a fluorescent pink background (see Figure 6I-1).

Support:

11 While some traffic incidents might be anticipated and planned for, emergencies and disasters might pose more severe and unpredictable problems. The ability to quickly install proper temporary traffic controls might greatly reduce the effects of an incident, such as secondary crashes or excessive traffic delays. An essential part of fire, rescue, spill clean-up, highway agency, and enforcement activities is the proper control of road users through the traffic incident management area in order to protect responders, victims, and other personnel at the site. These operations might need corroborating legislative authority for the implementation and enforcement of appropriate road user regulations, parking controls, and speed zoning. It is desirable for these statutes to provide sufficient flexibility in the authority for, and implementation of, TTC to respond to the needs of changing conditions found in traffic incident management areas.

Figure 6I-1. Examples of Traffic Incident Management Area Signs



Option:

12 For traffic incidents, particularly those of an emergency nature, TTC devices on hand may be used for the initial response as long as they do not themselves create unnecessary additional hazards.

Section 6I.02 Major Traffic Incidents

Support:

01 Major traffic incidents are typically traffic incidents involving hazardous materials, fatal traffic crashes involving numerous vehicles, and other natural or man-made disasters. These traffic incidents typically involve closing all or part of a roadway facility for a period exceeding 2 hours.

Guidance:

02 *If the traffic incident is anticipated to last more than 24 hours, applicable procedures and devices set forth in other Chapters of Part 6 should be used.*

Support:

03 A road closure can be caused by a traffic incident such as a road user crash that blocks the traveled way. Road users are usually diverted through lane shifts or detoured around the traffic incident and back to the original roadway. A combination of traffic engineering and enforcement preparations is needed to determine the detour route, and to install, maintain or operate, and then to remove the necessary traffic control devices when the detour is terminated. Large trucks are a significant concern in such a detour, especially when detouring them from a controlled-access roadway onto local or arterial streets.

04 During traffic incidents, large trucks might need to follow a route separate from that of automobiles because of bridge, weight, clearance, or geometric restrictions. Also, vehicles carrying hazardous material might need to follow a different route from other vehicles.

05 Some traffic incidents such as hazardous material spills might require closure of an entire highway. Through road users must have adequate guidance around the traffic incident. Maintaining good public relations is desirable. The cooperation of the news media in publicizing the existence of, and reasons for, traffic incident management areas and their TTC can be of great assistance in keeping road users and the general public well informed.

06 The establishment, maintenance, and prompt removal of lane diversions can be effectively managed by interagency planning that includes representatives of highway and public safety agencies.

Guidance:

07 *All traffic control devices needed to set up the TTC at a traffic incident should be available so that they can be readily deployed for all major traffic incidents. The TTC should include the proper traffic diversions, tapered lane closures, and upstream warning devices to alert traffic approaching the queue and to encourage early diversion to an appropriate alternative route.*

08 *Attention should be paid to the upstream end of the traffic queue such that warning is given to road users approaching the back of the queue.*

09 *If manual traffic control is needed, it should be provided by qualified flaggers or uniformed law enforcement officers.*

Option:

10 If flaggers are used to provide traffic control for an incident management situation, the flaggers may use appropriate traffic control devices that are readily available or that can be brought to the traffic incident scene on short notice.

Guidance:

11 *When light sticks or flares are used to establish the initial traffic control at incident scenes, channelizing devices (see Section 6F.63) should be installed as soon thereafter as practical.*

Option:

12 The light sticks or flares may remain in place if they are being used to supplement the channelizing devices.

Guidance:

13 *The light sticks, flares, and channelizing devices should be removed after the incident is terminated.*

Section 6I.03 Intermediate Traffic Incidents

Support:

01 Intermediate traffic incidents typically affect travel lanes for a time period of 30 minutes to 2 hours, and usually require traffic control on the scene to divert road users past the blockage. Full roadway closures might be needed for short periods during traffic incident clearance to allow traffic incident responders to accomplish their tasks.

02 The establishment, maintenance, and prompt removal of lane diversions can be effectively managed by interagency planning that includes representatives of highway and public safety agencies.

Guidance:

03 *All traffic control devices needed to set up the TTC at a traffic incident should be available so that they can be readily deployed for intermediate traffic incidents. The TTC should include the proper traffic diversions, tapered lane closures, and upstream warning devices to alert traffic approaching the queue and to encourage early diversion to an appropriate alternative route.*

04 *Attention should be paid to the upstream end of the traffic queue such that warning is given to road users approaching the back of the queue.*

05 *If manual traffic control is needed, it should be provided by qualified flaggers or uniformed law enforcement officers.*

Option:

06 If flaggers are used to provide traffic control for an incident management situation, the flaggers may use appropriate traffic control devices that are readily available or that can be brought to the traffic incident scene on short notice.

Guidance:

07 *When light sticks or flares are used to establish the initial traffic control at incident scenes, channelizing devices (see Section 6F.63) should be installed as soon thereafter as practical.*

Option:

08 The light sticks or flares may remain in place if they are being used to supplement the channelizing devices.

Guidance:

09 *The light sticks, flares, and channelizing devices should be removed after the incident is terminated.*

Section 6I.04 Minor Traffic Incidents

Support:

01 Minor traffic incidents are typically disabled vehicles and minor crashes that result in lane closures of less than 30 minutes. On-scene responders are typically law enforcement and towing companies, and occasionally highway agency service patrol vehicles.

02 Diversion of traffic into other lanes is often not needed or is needed only briefly. It is not generally possible or practical to set up a lane closure with traffic control devices for a minor traffic incident. Traffic control is the responsibility of on-scene responders.

Guidance:

03 *When a minor traffic incident blocks a travel lane, it should be removed from that lane to the shoulder as quickly as possible.*

Section 6I.05 Use of Emergency-Vehicle Lighting

Support:

01 The use of emergency-vehicle lighting (such as high-intensity rotating, flashing, oscillating, or strobe lights) is essential, especially in the initial stages of a traffic incident, for the safety of emergency responders and persons involved in the traffic incident, as well as road users approaching the traffic incident. Emergency-vehicle lighting, however, provides warning only and provides no effective traffic control. The use of too many lights at an incident scene can be distracting and can create confusion for approaching road users, especially at night. Road users approaching the traffic incident from the opposite direction on a divided facility are often distracted by emergency-vehicle lighting and slow their vehicles to look at the traffic incident posing a hazard to themselves and others traveling in their direction.

02 The use of emergency-vehicle lighting can be reduced if good traffic control has been established at a traffic incident scene. This is especially true for major traffic incidents that might involve a number of emergency vehicles. If good traffic control is established through placement of advanced warning signs and traffic control devices to divert or detour traffic, then public safety agencies can perform their tasks on scene with minimal emergency-vehicle lighting.

Guidance:

03 *Public safety agencies should examine their policies on the use of emergency-vehicle lighting, especially after a traffic incident scene is secured, with the intent of reducing the use of this lighting as much as possible while not endangering those at the scene. Special consideration should be given to reducing or extinguishing forward facing emergency-vehicle lighting, especially on divided roadways, to reduce distractions to oncoming road users.*

04 *Because the glare from floodlights or vehicle headlights can impair the nighttime vision of approaching road users, any floodlights or vehicle headlights that are not needed for illumination, or to provide notice to other road users of an incident response vehicle being in an unexpected location, should be turned off at night.*

Guidance:

07 *If a pushbutton is used to provide equivalent TTC information to pedestrians with visual disabilities, the pushbutton should be equipped with a locator tone to notify pedestrians with visual disabilities that a special accommodation is available, and to help them locate the pushbutton.*

Section 6D.03 Worker Safety Considerations

Support:

01 Equally as important as the safety of road users traveling through the TTC zone is the safety of workers. TTC zones present temporary and constantly changing conditions that are unexpected by the road user. This creates an even higher degree of vulnerability for workers on or near the roadway.

02 Maintaining TTC zones with road user flow inhibited as little as possible, and using TTC devices that get the road user's attention and provide positive direction are of particular importance. Likewise, equipment and vehicles moving within the activity area create a risk to workers on foot. When possible, the separation of moving equipment and construction vehicles from workers on foot provides the operator of these vehicles with a greater separation clearance and improved sight lines to minimize exposure to the hazards of moving vehicles and equipment.

Guidance:

03 *The following are the key elements of worker safety and TTC management that should be considered to improve worker safety:*

- *A. Training—all workers should be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability. Workers having specific TTC responsibilities should be trained in TTC techniques, device usage, and placement.*
- *B. Temporary Traffic Barriers—temporary traffic barriers should be placed along the work space depending on factors such as lateral clearance of workers from adjacent traffic, speed of traffic, duration and type of operations, time of day, and volume of traffic.*
- *C. Speed Reduction—reducing the speed of vehicular traffic, mainly through regulatory speed zoning, funneling, lane reduction, or the use of uniformed law enforcement officers or flaggers, should be considered.*
- *D. Activity Area—planning the internal work activity area to minimize backing-up maneuvers of construction vehicles should be considered to minimize the exposure to risk.*
- *E. Worker Safety Planning—a trained person designated by the employer should conduct a basic hazard assessment for the worksite and job classifications required in the activity area. This safety professional should determine whether engineering, administrative, or personal protection measures should be implemented. This plan should be in accordance with the Occupational Safety and Health Act of 1970, as amended, "General Duty Clause" Section 5(a)(1) - Public Law 91-596, 84 Stat. 1590, December 29, 1970, as amended, and with the requirement to assess worker risk exposures for each job site and job classification, as per 29 CFR 1926.20 (b)(2) of "Occupational Safety and Health Administration Regulations, General Safety and Health Provisions" (see Section 1A.11).*

Standard:

04 **All workers, including emergency responders, within the right-of-way who are exposed either to traffic (vehicles using the highway for purposes of travel) or to work vehicles and construction equipment within the TTC zone shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107–2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" (see Section 1A.11), or equivalent revisions, and labeled as meeting the ANSI 107-2004 standard performance for Class 2 or 3 risk exposure, except as provided in Paragraph 5. A person designated by the employer to be responsible for worker safety shall make the selection of the appropriate class of garment.**

Option:

05 Emergency and incident responders and law enforcement personnel within the TTC zone may wear high-visibility safety apparel that meets the performance requirements of the ANSI/ISEA 207-2006 publication entitled "American National Standard for High-Visibility Public Safety Vests" (see Section 1A.11), or equivalent revisions, and labeled as ANSI 207-2006, in lieu of ANSI/ISEA 107-2004 apparel.

Standard:

06 **When uniformed law enforcement personnel are used to direct traffic, to investigate crashes, or to handle lane closures, obstructed roadways, and disasters, high-visibility safety apparel as described in this Section shall be worn by the law enforcement personnel.**

07 **Except as provided in Paragraph 8, firefighters or other emergency responders working within the right-of-way shall wear high-visibility safety apparel as described in this Section.**

Option:

08 Firefighters or other emergency responders working within the right-of-way and engaged in emergency operations that directly expose them to flame, fire, heat, and/or hazardous materials may wear retroreflective turn-out gear that is specified and regulated by other organizations, such as the National Fire Protection Association.

09 The following are additional elements of TTC management that may be considered to improve worker safety:

A. Shadow Vehicle—in the case of mobile and constantly moving operations, such as pothole patching and striping operations, a shadow vehicle, equipped with appropriate lights and warning signs, may be used to protect the workers from impacts by errant vehicles. The shadow vehicle may be equipped with a rear-mounted impact attenuator.
B. Road Closure—if alternate routes are available to handle road users, the road may be closed temporarily. This may also facilitate project completion and thus further reduce worker vulnerability.
C. Law Enforcement Use—in highly vulnerable work situations, particularly those of relatively short duration, law enforcement units may be stationed to heighten the awareness of passing vehicular traffic and to improve safety through the TTC zone.
D. Lighting—for nighttime work, the TTC zone and approaches may be lighted.
E. Special Devices—these include rumble strips, changeable message signs, hazard identification beacons, flags, and warning lights. Intrusion warning devices may be used to alert workers to the approach of errant vehicles.

Support:

10 Judicious use of the special devices described in Item E in Paragraph 9 might be helpful for certain difficult TTC situations, but misuse or overuse of special devices or techniques might lessen their effectiveness.

For Your Safety

High-visibility safety apparel makes the wearer more visible to traffic under any conditions.

High-visibility safety apparel is personal protective safety clothing that is intended to provide conspicuity [make the wearer more visible] during both daytime and nighttime usage, and that meets the Performance Class 2 or 3 requirements of American National Standards Institute (ANSI)/ International Safety Equipment Association (ISEA) 107-2004. [1]

All workers within the right-of-way of a Federal-aid highway who are exposed either to traffic, or to construction equipment within the work area shall wear high-visibility safety apparel. Workers affected by this requirement include, but are not limited to:

- Highway construction and maintenance crews, including flaggers
- Inspectors
- Engineering personnel
- Survey crews
- Utility crews
- Responders

When Should High-Visibility Safety Apparel Be Replaced?

High-visibility safety apparel should be replaced when it becomes faded, torn, dirty, soiled, worn, or defaced, or if it is not visible at 1,000 feet day or night. The typical useful service life of high-visibility safety apparel depends on the type of work an individual performs while wearing the apparel.

If you think your safety apparel is questionable, you should replace it.

Apparel that is worn on a daily basis has a service life expectancy of approximately 6 months, although apparel that is not worn on a daily basis may have a useful service life of up to 3 years.

[1] Federal Highway Administration worker visibility final rule

How Do I Replace My High-Visibility Safety Apparel?

When apparel is ready for replacement, notify your safety compliance officer or supervisor and request replacement apparel. Ensure that they know the kind of work you are doing (repaving, maintenance work, nighttime work, etc.) so that they will know which type of apparel to provide to you. Once you have received your new apparel, cut your old apparel in half so that it can't be reused and then dispose of it properly.

Purchasing agents should consider the following when buying new apparel:

- Working conditions (time of day,temperature, etc.).
- Class of apparel needed (Performance Class 2, or 3; Class 1 is unacceptable for any highway work. See brochure entitled: Worker Visibility Be Seen. Be Safe. New Requirements for High Visibility Garments- Contact ATSSA for more information.)
- Compliance with ANSI/ISEA 107-2004 and 207-2006.
- State and local standards and guidelines
- MUTCD section 6E, which gives the appropriate colors for the apparel.

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ATSSA
SAFER ROADS SAVE LIVES
American Traffic Safety Services Association

U.S. Department of Transportation
Federal Highway Administration

High-Visibility Safety Apparel In Highway Work Zones

When does my high-visibility apparel no longer protect me and need to be replaced?

ATSSA
SAFER ROADS SAVE LIVES

U.S. Department of Transportation
Federal Highway Administration

May 2008

Acceptable

New high-visibility safety apparel is characterized by having vivid color contrast and high reflectivity.

Marginal

Characteristics: Good reflectivity although the vest has some soiling and light fading.

Unacceptable

Characteristics: little or no reflectivity, and soiled and faded material.

Acceptable

Apparel that is used but is in like-new condition is characterized as having excellent color contrast, excellent reflectivity, and is not faded or soiled.

Marginal *

Characteristics: Good reflectivity but has some soiling and light fading of material. *Note: This picture was taken with a flash and simulates nighttime conditions.

Unacceptable

Characteristics: Poor color contrast, low or no reflectivity, significant fading or soiling, and deteriorated reflective strips.

Pictures provided by Michigan Department of Transportation and Washington Department of Transportation

Factors that may cause the apparel to wear out more quickly, depending on the amount of use, include:

- Higher elevations due to increased ultra-violet rays
- Hot climates
- Work done while wearing apparel (some jobs are more dirty or strenuous and could be more likely to lead to soiling or tears)
- Care of the high visibility apparel: how you wash and store your apparel (refer to the label inside the apparel for proper care instructions)

Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped With High-Voltage Batteries

(Law Enforcement/Emergency Medical Services/Fire Department)

Version 2

Electric and Hybrid-Electric Vehicle Considerations

In the event of damage, fire, or flooding involving an electric vehicle (EV) or hybrid-electric vehicle (HEV):

- Always assume the high-voltage (HV) battery and associated components are energized and fully charged.
- Exposed electrical components, wires, and HV batteries present potential HV shock hazards.
- Venting/off-gassing HV battery vapors are potentially toxic and flammable.
- Physical damage to the vehicle or HV battery may result in immediate or delayed release of toxic and/or flammable gases and fire.
- A HV battery in a flooded vehicle may have high voltage and short circuits that can shock and cause fires.

DETERMINE IF THE VEHICLE IS AN ELECTRIC OR HYBRID-ELECTRIC VEHICLE, and if it is, advise Dispatch and all responders that an electric or hybrid-electric vehicle is involved.

IF YOUR LOCAL STANDARD OPERATING PROCEDURES (SOPs) ALLOW IT AND YOU ARE PROPERLY TRAINED AND EQUIPPED, which includes using personal protective equipment, then consider the following:

Vehicle Shutdown and High-Voltage System Disabling

IMMOBILIZE VEHICLE

- Always approach vehicle from the sides to stay out of potential travel path. It may be difficult to determine if the vehicle is running due to lack of engine noise.
- If possible, chock the tires, place the vehicle in Park, and set the parking brake.

DISABLE VEHICLE

- Turn off the vehicle, activate hazard lights, and move vehicle keys at least 16 feet away from the vehicle.
- Disconnect the vehicle's 12-volt battery.
- CAUTION: Safety restraints, air bags, and other safety systems may be active for up to 5 minutes after disconnecting the 12-volt battery.

Law Enforcement and Emergency Medical Services	Fire Department
CRASHES DAMAGING THE AREA OF THE HV BATTERY	
NOTE: Follow local standard operating procedures (SOPs) for personal protection and safety. • If you detect leaking fluids, sparks, smoke, flames, increased temperature, gurgling, popping, or hissing noises from the HV battery compartment, ventilate passenger area (i.e., roll down windows or open doors) and request fire department response. • If you detect any unusual odors or experience eye, nose, or throat irritation, move away from the vehicle and evacuate others from the immediate area. Rapid extrication may be needed for injured or trapped occupants. • Remain a safe distance upwind and uphill from the vehicle and out of the way of oncoming traffic until other appropriately equipped emergency responders arrive. • Avoid contact with orange high-voltage cabling and areas identified as high-voltage risk by warning labels	**NOTE:** Follow local standard operating procedures (SOPs) for personal protection and safety. • If you detect leaking fluids, sparks, smoke, flames, increased temperature, gurgling, or bubbling sounds from the HV battery compartment, assume there is a battery fire and ventilate the passenger area (i.e., roll down windows or open doors). • Move away from the vehicle and evacuate others from the immediate area if you detect any unusual odors or experience eye, nose, or throat irritation. Wear full Personal Protective Equipment (PPE) and Self-Contained Breathing Apparatus (SCBA). • Be alert. There is a potential for delayed fire with damaged lithium-ion batteries.
FIRES INVOLVING OR EXPOSING THE HV BATTERY	
• If you are unable to quickly remove the occupants, use a fire extinguisher to protect them from the flames. • As with any vehicle fire, the byproducts of combustion can be toxic and all individuals should be directed to move to a safe distance upwind and uphill from the vehicle fire and out of the way of oncoming traffic	**NOTE:** If the fire involves a lithium-ion battery, it will require large, sustained volumes of water for extinguishment. Consider defensive tactics and allow fire to burn out. • If there is active fire, follow local standard operating procedures (SOPs) for vehicle fires. Wear appropriate Personal Protective Equipment (PPE) and Self Contained Breathing Apparatus (SCBA). • If occupants are still inside the vehicle or trapped, a fire extinguisher may be used to protect the occupants until a hose line is available or the occupants are removed. Consider establishing a water supply to support long-term operation. • Use a hose line to apply water to extinguish the fire while continuing to cool the HV battery and its casing. **Never attempt to penetrate the HV battery or its casing to apply water.** • Avoid contact with orange high-voltage cabling and areas identified as high-voltage risk by warning labels. • Be alert. There is a potential for delayed ignition or re-ignition of a lithium-ion battery fire even after it is believed to be extinguished. This may remain an issue until the lithium-ion battery is properly discharged. • As with any vehicle fire, the byproducts of combustion can be toxic and all individuals should be directed to move to a safe distance upwind and uphill from the vehicle fire and out of the way of oncoming traffic.

Post-Incident

- Always assume the HV battery and associated components are energized and fully charged.
- Ensure that passenger and cargo compartments remain ventilated (i.e., open window, door, or trunk).
- Notify an authorized service center or vehicle manufacturer representative as soon as possible as there may be other steps they can take to secure and discharge the HV battery.
- Do not store a severely damaged vehicle with a lithium-ion battery inside a structure or within 50 feet of any structure, vehicle, or combustibles.
- Request fire department (if appropriate) if you observe leaking fluids, sparks, smoke, flames, or hear gurgling or bubbling from the HV battery.

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National Highway Traffic Safety Administration

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Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped With High-Voltage Batteries

(Towing and Recovery Operators and Vehicle Storage Facilities)

Electric and Hybrid-Electric Vehicle Considerations

In the event of damage, fire, or flooding involving an electric vehicle (EV) or hybrid-electric vehicle (HEV):

- Always assume the high-voltage (HV) battery and associated components are energized and fully charged.
- Exposed electrical components, wires, and HV batteries present potential HV shock hazards.
- Venting/off-gassing HV battery vapors are potentially toxic and flammable.
- Physical damage to the vehicle or HV battery may result in immediate or delayed release of toxic and/or flammable gases and fire.
- A HV battery in a flooded vehicle may have high voltage and short circuits that can shock and cause fires.

- **DETERMINE IF THE VEHICLE IS AN ELECTRIC OR HYBRID-ELECTRIC VEHICLE**, and if it is, advise Dispatch and all responders that an electric or hybrid-electric vehicle is involved.
- Be alert. There is a potential for delayed fire with damaged lithium-ion batteries.
- Consult with the responding fire department to determine the actions it took.
- If you detect leaking fluids, sparks, smoke, flames, increased temperature, gurgling, popping, or hissing noises from the HV battery compartment, call 911.
- **Notify an authorized service center or vehicle manufacturer representative as soon as possible as there may be additional steps necessary you or they can take to secure and, discharge, handle, and store the HV battery and vehicle.**
- Notify the storage facility of your actions and the actions the Emergency Responders told you that they took.

If you are properly trained and equipped, which includes using personal protective equipment, then consider the following:

Vehicle Shutdown and High-Voltage System Disabling

RECOVERING/TRANSPORTING VEHICLE

- **Call an authorized service center or vehicle manufacturer representative to determine additional steps that you should take to safely recover or transport the vehicle.**
- Always approach vehicle from the sides to stay out of potential travel path. It may be difficult to determine if the vehicle is running due to lack of engine noise.
- Place vehicle in Park, set the parking brake, turn off the vehicle, activate hazard lights, and remove keys to a distance at least 16 feet from the vehicle until loading the vehicle for transport.
- Refer to vehicle manual/recovery guide to locate proper attachment/connection points and transport method.
- Avoid contact with orange high-voltage cabling and areas identified as high-voltage risk by warning labels.

STORING VEHICLE

- Do not store a severely damaged vehicle with a lithium-ion battery inside a structure or within 50 feet of any structure, vehicle, or combustibles.
- Ensure that passenger and cargo compartments remain ventilated.
- Prior to placing and while located in storage area/tow lot, continue to inspect vehicle for leaking fluids, sparks, smoke, flames, gurgling, or bubbling sounds from the HV battery and call 911 if any of these are detected.
- Maintain clear access to stored vehicles for monitoring and emergency response if needed.

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Version 2

Interim Guidance for Electric and Hybrid-Electric Vehicles Equipped With High-Voltage Batteries (Vehicle Owner/General Public)

Electric and Hybrid-Electric Vehicle Considerations

In the event of damage, fire, or flooding involving an electric vehicle (EV) or hybrid-electric vehicle (HEV):

- Always assume the high-voltage (HV) battery and associated components are energized and fully charged.
- Exposed electrical components, wires, and HV batteries present potential HV shock hazards.
- Venting/off-gassing HV battery vapors are potentially toxic and flammable.
- Physical damage to the vehicle or HV battery may result in immediate or delayed release of toxic and/or flammable gases and fire.
- A HV battery in a flooded vehicle may have high voltage and short circuits that can shock and cause fires.

Vehicle Information and General Safety Practices

- Know the make and model of your vehicle.
- Review the owner's manual and become familiar with your vehicle's safety information and recommended safety practices.
- Do not attempt to repair damaged electric and hybrid-electric vehicles yourself. Contact an authorized service center or vehicle manufacturer representative for service.

Crashes

A crash or impact significant enough to require an emergency response for conventional vehicles would also require the same response for an electric or hybrid-electric vehicle.

If possible

- Move your car to a safe, nearby location and remain on the scene.
- Roll down windows before shutting vehicle off.
- Place vehicle in Park, set parking brake, turn off the vehicle, activate hazard lights, and move key(s) at least 16 feet away from the vehicle.

Always

- Call 911 if assistance is needed and advise that an electric or hybrid-electric vehicle is involved.
- Do not touch exposed electrical components or the engine compartment, as a shock hazard may exist.
- Avoid contact with leaking fluids and gases, and remain out of the way of oncoming traffic until emergency responders arrive.
- When emergency responders arrive, tell them that the vehicle involved is an EV or HEV.

Fires

As with any vehicle, call 911 immediately if you see sparks, smoke, or flames coming from the vehicle.

- Exit the vehicle immediately.
- Advise 911 that an electric or hybrid-electric vehicle is involved.
- As with any vehicle fire, do not inhale smoke, vapors, or gas from the vehicle, as they may be hazardous.
- Remain a safe distance upwind and uphill from the vehicle fire.
- Stay out of the roadway and stay out of the way of any oncoming traffic while awaiting the arrival of emergency responders.

Flooding

- Remain a safe distance away and do NOT attempt physical contact with the vehicle.
- Immediately call 911 and advise that an electric or hybrid-electric vehicle is involved

Post-Incident

- Do not store a severely damaged vehicle with a lithium-ion battery inside a structure or within 50 feet of any structure, vehicle, or combustible.
- Ensure that passenger and cargo compartments remain ventilated (i.e., open window, door, or trunk).
- Notify an authorized service center or vehicle manufacturer representative as soon as possible, as there may be other steps they can take to secure and discharge the HV battery.
- Call 911 if you observe leaking fluids, sparks, smoke, or flames, or hear gurgling or bubbling from the HV battery.

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LAW ENFORCEMENT VEHICLE IDENTIFICATION GUIDE

CLASS 1 - LIGHT-DUTY
(6,000 lbs. or less GVWR - 4 tires)*

CLASS 2 - LIGHT-DUTY
(6,001 - 10,000 lbs. GVWR - 4 tires)*

Class 1 through 2 include passenger cars, light trucks and mini vans, full size pickups, sport utility vehicles, full size vans

CLASS 1 AND 2 - LIGHT-DUTY TOW
Gross Vehicle Weight Rating (6,000 to 10,000 lbs.)

Passenger cars, small SUVs and pickup trucks

- ☐ Year, make and model?
- ☐ Number of occupants?
- ☐ Full-size pickup or van?
- ☐ Is it loaded?
- ☐ 4x4 or AWD?
- ☐ Keys?
- ☐ Trailer?
- ☐ What is the load?

VEHICLES IN THESE CLASSES USUALLY HAVE FOUR TIRES.

CLASS 3 - LIGHT- OR MEDIUM-DUTY
(10,001 - 14,000 lbs. GVWR - 6 tires or more)*

CLASS 4 - MEDIUM-DUTY
(14,001 - 16,000 lbs. GVWR - 6 tires or more)*

CLASS 5 - MEDIUM-DUTY
(16,001 - 19,500 lbs. GVWR - 6 tires or more)*

CLASS 6 - MEDIUM-DUTY
(19,501 - 26,000 lbs. GVWR - 6 tires or more)*

Class 3 through 6 include a range of mid-sized to larger vehicles including delivery trucks, utility vehicles, motor homes, package parcel trucks, ambulances, small dump trucks, landscape vehicles, small flatbed and stake-type trucks, refrigerated and box trucks, small and medium-duty buses (school and local transit buses.)

CLASS 3, 4, 5 & 6 - LIGHT- OR MEDIUM-DUTY TOW
Gross Vehicle Weight Rating (10,001 up to 26,000 lbs.)

- ☐ Year, make and model?
- ☐ Body type – pickup truck, box truck, flatbed, step van
- ☐ What is the load and is it damaged?
- ☐ Pickup, van, shuttle bus or motor home?
- ☐ Number of occupants?
- ☐ Keys?
- ☐ Vehicle description is critical to determine the proper tow vehicle

VEHICLES IN THESE CLASSES USUALLY HAVE SIX TIRES.

CLASS 7 - HEAVY-DUTY
(26,001 - 33,000 lbs. GVWR - 6 tires or more)*

CLASS 8 - HEAVY-DUTY
(33,001 lbs. and over GVWR - 10 tires or more)*

Class 7 and 8 include a range of heavier vehicles including large delivery trucks, motor coaches, all tractor-trailer combinations, refuse trucks, construction vehicles, etc.

CLASS 7 AND 8 - HEAVY-DUTY TOW
Gross Vehicle Weight Rating
(Class 7 - 26,001 to 33,000 lbs.)
(Class 8 - 33,001 and up to state limit)

- ☐ Year, make and model?
- ☐ Bus or motor home?
- ☐ Number of occupants?
- ☐ Two or three axle truck or tractor-trailer?
- ☐ What is the load and is it damaged?
- ☐ Keys?

STRAIGHT TRUCKS, BUSES OR MOTOR HOMES IN THESE CLASSES WILL USUALLY HAVE SIX TO TEN TIRES. TRACTOR AND TRAILER COMBINATIONS WILL HAVE FOURTEEN OR MORE TIRES.

MOTORCYCLES - LIGHT-DUTY TOW
Sports motorcycle – off road/basic street type
Performance motorcycle – "racing" model type
Touring motorcycle – large, heavy road touring type
Custom or 3-wheel motorcycle

TRAILERS - LIGHT-, MEDIUM- OR HEAVY-DUTY TOW

- ☐ Is it a truck and trailer to tow or just a trailer to tow?
- ☐ Number of axles and what is it hauling or is it designed to haul?
- ☐ Type of load or weight of load?
- ☐ If a tow, does the trailer have a ball, pintle or a fifth wheel hitch?

MOTOR HOMES - LIGHT-, MEDIUM- OR HEAVY-DUTY TOW
Class C – usually built on a van or pickup type truck chassis
Class A – usually built on a medium to large truck or bus chassis

LOCATION:
All locations are considered to be on the right hand shoulder unless advised the incident is in a lane of travel, in the center divider or off the road.
Locations should always be given so the tow truck can access the scene safely.
Freeway locations should always be given going in one direction, such as southbound south of a specific landmark or intersection.

REASON FOR THE TOW: Service call, storage, wreck or recovery
Service call: Specify the reason, fuel, tire, etc.
Tow: Specify the reason
Storage: Arrest or impound tow
- ☐ Is the vehicle stripped, burned, flat tires or no wheels?

Wreck: Condition of the vehicle
- ☐ Is the vehicle/truck overturned?
- ☐ Are lanes blocked?
- ☐ Is the vehicle off the road? ☐ How far?
- ☐ Any special problems at the scene or special equipment needed?

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*** Note:** The Gross Vehicle Weight Rating (GVWR) of the vehicle to be towed or recovered can be found on the identification label on the vehicle's driver's side doorframe. The number of pounds listed on the label can then be compared with the DOT Classification Vehicle Type Chart for the correct DOT class.

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